

Founded in 1832

RAILWAY LOCOMOTIVES AND CARS

OCTOBER 1957

A SIMMONS-BOARDMAN TIME-SAVER PUBLICATION

formerly

RAILWAY
Mechanical and
Electrical Engineer

Roanoke
Car Shop

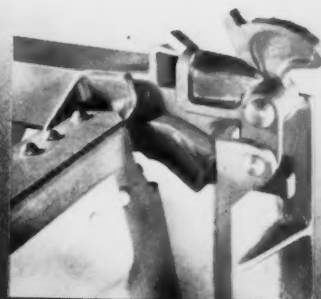
RDC Engine
Overhaul

EJ&E Box Cars for
Tin Plate Traffic

'Rapid' Shop
Includes Automation

INCORPORATED DROP-END UNITS

Speed Service..
Sustain Structure

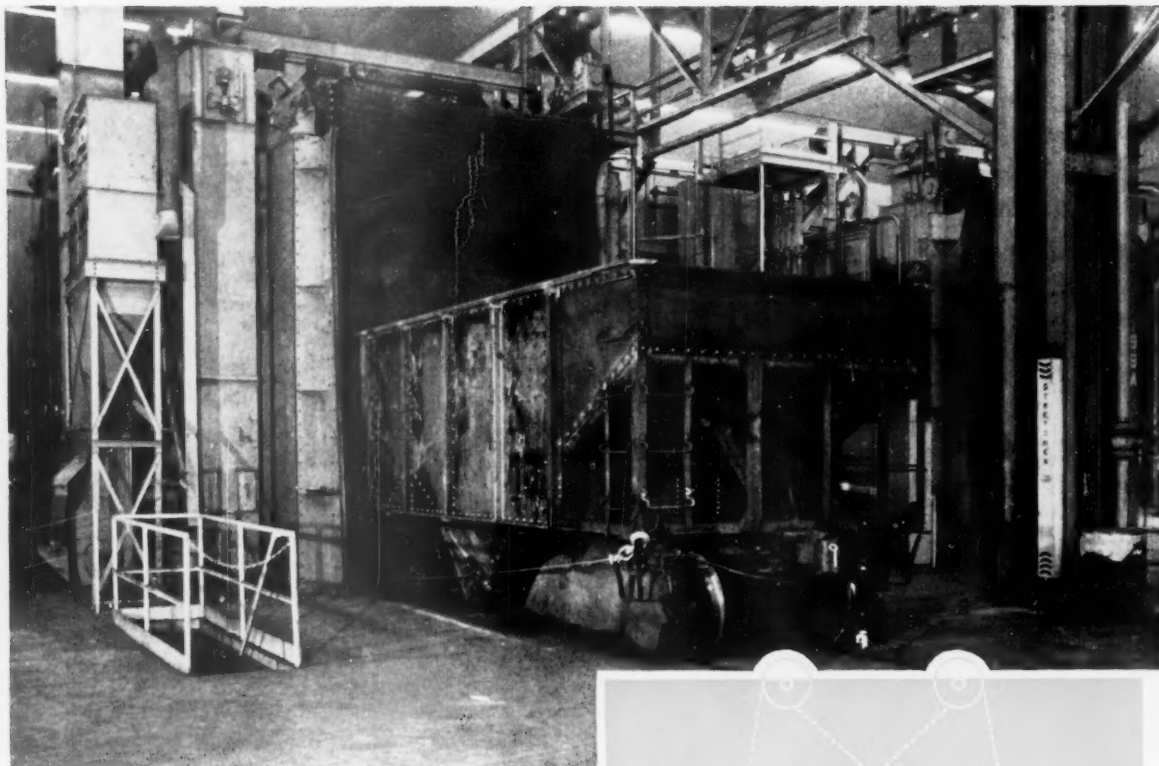


PROVIDE INTERLOCKED CORNERS
AND ONE MAN OPERATION



Drop End Locks
and
End Balancers

THE WINE RAILWAY APPLIANCE COMPANY
TOLEDO 9, OHIO



AUTOMATIC Pangborn Rotoblast cuts freight car cleaning time 85%!

In the Pennsylvania RR's Samuel Rea Shop, Hollidaysburg, Pa., hopper cars and boxcars are Rotoblasted before painting and stenciling. With the equipment previously used for this job, five men each spent an average of 2.7 hours cleaning a typical 42-ft. hopper car. Today, using special Pangborn Rotoblast Rooms for the same job, the railroad has cut labor to *four* men per unit—and they *turn out four cars every hour!* In addition to cutting man-hours 85%, the quality of cleaning is far better than before.



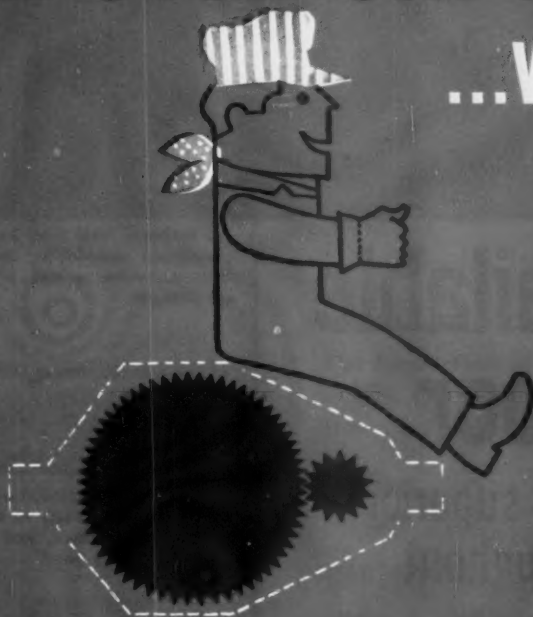
If you have an unusual cleaning problem, Pangborn offers a special service. Pangborn engineers will study your problem and its relation to your production line. Then they will design a Rotoblasting machine for your particular needs. Find out now how Pangborn's engineering service can give you better cleaning and faster production at lower cost.

Write today for Bulletin 1210A to PANGBORN CORP., 3700 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment.*

Pangborn ROTOBLAST®
cleans cheaper

NEW ESSO ARAPEN GEAR LUBRICANT GIVES TRACTION MOTOR GEARS DEPENDABLE LUBRICATION FOR OVER SIX MONTHS

...WITHOUT
GREASE
ADDITION!



Arapen Gear Lubricant—an important new traction motor gear lubricant developed by Esso Research—is now available to *you*. But before going on the market, this remarkable new product was thoroughly tested in the lab and *on the road*.

On the New York Central... Arapen Gear Lubricant was tested for 18 months in regular diesel freight service. The test proved the feasibility of six months' operation without additional lubrication.



Performance Advantages of ARAPEN GEAR LUBRICANT:

ANTI-LEAKAGE CHARACTERISTICS: maintains consistency through full range of operating temperatures, resulting in a minimum of drippage on ties, pits and station platforms.

EXCELLENT OXIDATION STABILITY: permits extended operation without hardening.

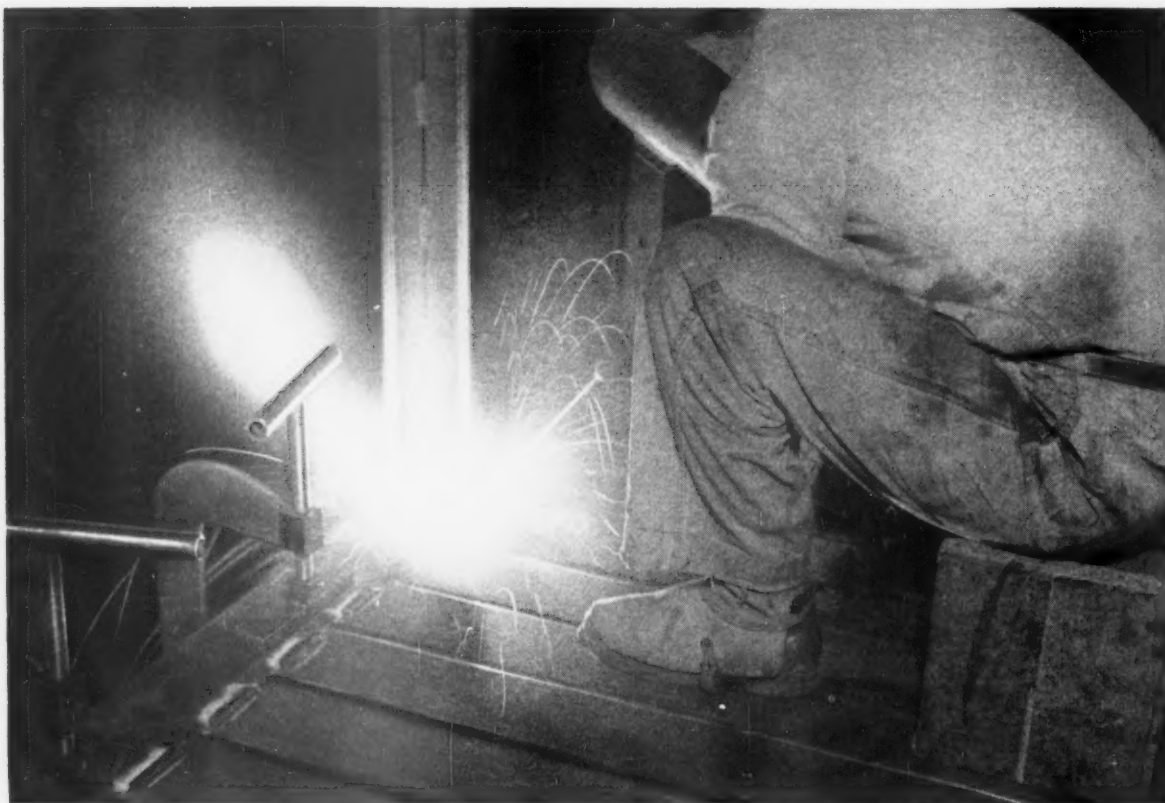
EXCELLENT STRUCTURE STABILITY: minimizes failures due to dry gears because of excessive gear case leakage.

EXCELLENT WEAR CHARACTERISTICS: provides proper lubrication throughout life of gears.

For complete information and technical assistance in the use of new Esso Arapen Gear Lubricant, call your local Esso office or write: Esso Standard Oil Co., Railroad Sales Div., 15 W. 51st Street, New York 19, N. Y.



RAILROAD
PRODUCTS



P-S nailable steel floor

design details permit superior welding features throughout

The continuing attention given to such vital areas as welding processes and methods is another reason why prominent carriers have selected P-S Nailable Steel Floor for installation in over 2,500 cars now in service or on order with Pullman-Standard. They have found that this concern with all phases of fabrication and installation provides a car floor that gives more nailing space, more nail holding power, greater strength and minimizes maintenance.

FOR PROOF on how Pullman-Standard Nailable Steel Floor provides outstanding lading and equipment protection, write to Pullman-Standard or contact your nearest P-S Sales Office.

WORLD'S LARGEST BUILDER OF ROLLING STOCK
PULLMAN - STANDARD
 CAR MANUFACTURING COMPANY

221 N. LA SALLE STREET • CHICAGO 1, ILLINOIS
 BIRMINGHAM • PITTSBURGH • NEW YORK • SAN FRANCISCO

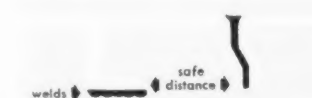
P-S Nailable Steel Floor becomes a permanent installation, minimizing floor maintenance and adding to car strength.



MORE WELDS, fourteen per plank, join each floor plank to the next. Joints won't rupture, nail holding power is always good.



LONGER WELDS made to squared heel of plank support angle provide 64% more attachment to underframe and reduce danger of under-cutting.



SAFER WELDING CONDITIONS when attaching floor to underframe. Welds are made to copper-bearing steel support angles, not near nailing grooves. No molten filler endangers welder, no chance of fire.

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RAILWAY LOCOMOTIVES AND CARS

Founded in 1832 as
the American Rail-Road Journal

OCTOBER 1957

VOLUME 131, No. 10

MOTIVE POWER AND CAR

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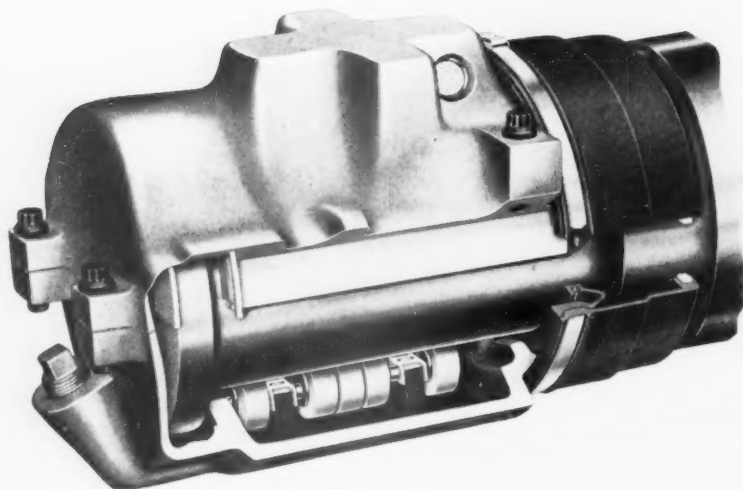
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Published monthly by the Simmons-Boardman Publishing Corporation, James G. Lyne, President, Arthur J. McGinnis, Exec. Vice-Pres. and Treas., Fred A. Clark, Vice-Pres. and Sec. Entered as second-class matter January 16, 1953, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price to railroad employees only in U. S. possessions and Canada, \$2 one year, \$3 two years, payable in advance. Subscription price to railroad employees elsewhere, \$9 per year. Single copies, 50¢. R. C. Van Ness, Director of Circulation, 30 Church St., New York 7, N. Y.

NEXT MONTH:

How UP Tests Streamliner Brakes
24-RL Brake in Color Schematics
Roll Them Out Like New—Part 5



Cartridge Bearing

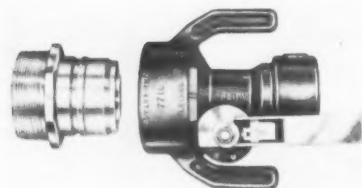
A journal bearing cartridge for freight cars has been developed by Cleveland Graphite Bronze Division of Clevite Corp. Tested by AAR and approved for limited application in interchange service, the Clevite bearing cartridge has 18 months of trouble-free road service, and continuing road tests are in progress.

The unit is simple to install and requires a minimum of modification using a few standard tools. The main sleeve bearing and two thrust bearings—formed to provide 180-deg arc of contact with journal and collar—are steel-backed lead-base babbitt with a tin alloy to prevent oil corrosion.

Two positive seals, a double-lipped oil seal and a dust guard, function independently. The oil seal, made of Buna-N synthetic rubber has high oil resistance

and temperature characteristics. A garter spring retains seal in positive contact around journal; the sealing edge formed has a double lip, with primary and secondary oil seal at all times. Dust guard of weather resistant neoprene keeps dust and dirt particles away from oil sealing surfaces. At continuous point of contact with the dust guard seat, a felt seal retains wiping action indefinitely.

Two oil reservoirs—main sump and collar well—hold 1½ pts of oil. The collar well is replenished by oil flow from the journal plus oil mist created during operation. The lubricator consists of five hard felt rollers kept in constant contact with the rotating journal by confined compression springs. Oil is applied by direct rolling action; excess oil acts as a cooling agent. Distributed by *Standard Car Truck Co., Dept. RLC, 332 S. Michigan ave., Chicago 4.*



Diesel Fueling Coupling

This diesel fueling coupling-valve is said to eliminate spillage, reduce sewage contamination, and cut fueling time up to 30 per cent.

Employing the Roylva "Quick-Lock" principle, incorporating an inclined plane

and balls, the coupling is positively connected or disconnected from the mating nipple simply and easily with only a quarter-turn of the collar-cam assembly. The audible "click" of the balls dropping into their locking pocket, plus the visible "locked" marking on the collar, indicates a leakproof, spillproof and vibration-proof connection. The valve control mechanism is designed to interlock with the collar of the coupling to preclude disconnection of the coupling unless the valve is fully closed.

Cleaner fuel is assured by a strainer installed in the inlet to valve. This prevents segments of deteriorated hose and other foreign matter from entering tank. *Airterra, Dept. RLC, 1706 Standard ave., Glendale 1, Calif.*

Traction Gear Lubricant

Trojan R-104 is a traction motor gear lubricant said to have excellent cold-temperature viscosity characteristics and to retain proper consistency at all operating temperatures. This means less gear case leakage. Oxidation inhibitors are added to provide constant, even application throughout heavy and prolonged operations. The lubricant's extreme pressure properties have been proven by its successfully passing the Timken 40-lb load test. In bulk the material is available in 120- and 400-lb drum and is also supplied in 1-lb poly bags which can be dropped into the gear case where the bag disintegrates and becomes an integral part of the lubricant. *Cities Service Petroleum Inc., Dept. RLC, 54 Wall st., New York 5.*



High-Power Cranking Battery

A new lead-acid storage battery designated as Type TG Exide-Iron-clad Giant for the operation of industrial trucks was announced a short time ago. Another battery of similar construction, designated Type MGD is now available for diesel locomotive cranking.

Active material on the plates is held securely in place by armored porous tubing, made of continuous-filament glass fibers within a perforated polyvinyl chloride armor. It is a construction which is designed to increase both life and capacity. As applied to cranking, it gives a 50 per cent increase over present tubular-plate-type batteries in amperes discharged at diesel engine cranking rates.

A new MGD battery normally furnished for switching locomotives (600 to 1,200 hp) will deliver power equivalent

(Continued on page 58)

ENGINEER'S FIELD REPORT

PRODUCT RPM DELO OIL RR

BAMBERGER RAILROAD CO.
FIRM Salt Lake City, Utah

5 years without overhaul on RPM DELO Oil



Lubricated with RPM DELO Oil RR since going into service, three switch locomotives of Bamberger Railroad have worked over five years without a major overhaul. "The oil does such a good job of protecting engines that I've never had to repair or replace a part because of faulty lubrication," says

General Shop Foreman J. F. Buckley (below). "Every time we've opened the engines for inspection we've found them clean, free of carbon or lacquer deposits." Bamberger hauls general freight between lines of UP, WP, SP, and D&RGW over 36.9 miles of its own mainline track between Salt Lake City and Ogden.



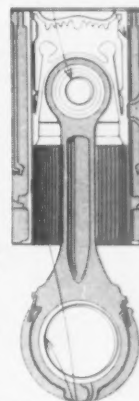
Clean piston (above) has no measurable wear, shows the kind of performance Bamberger gets with RPM DELO Oil RR. "We simply wipe off parts and they're bright and shining," says Mr. Buckley. Firm's EMD 800's (#601 top right, #602 above) deliver cars to sidings and make up trains for larger locomotive—work an average of 16 hours a day. Engine #570 (top left) makes the Salt Lake-Ogden run, works 10 to 12 hours daily.



STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

Why RPM DELO OIL RR reduces wear, corrosion

- Oil stays on engine parts—hot or cold, running or idle
- Anti-oxidant resists lacquer formation
- Detergent keeps parts clean
- Special compounds prevent corrosion of bearing metals
- Inhibitor resists foaming



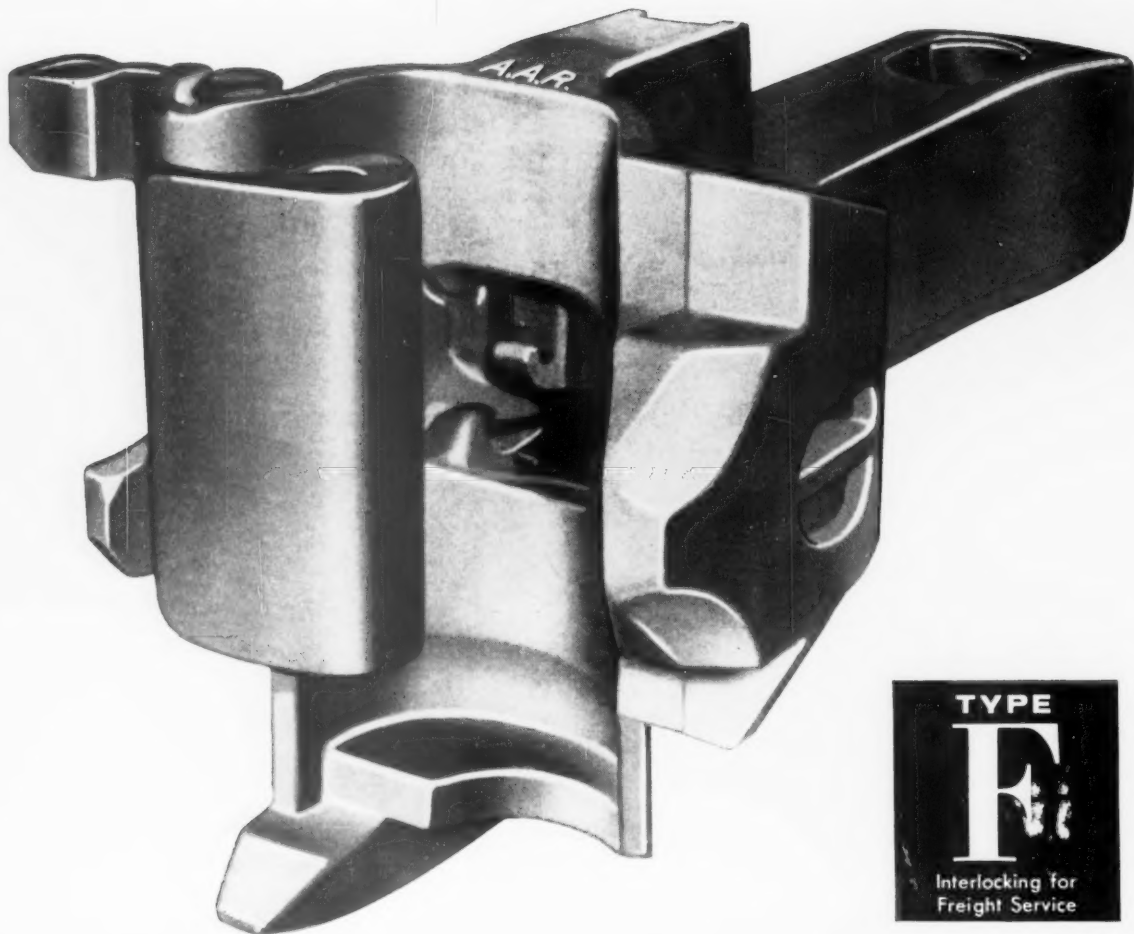
For More Information about RPM DELO Oils or other petroleum products of any kind, or the name and address of your nearest distributor, write or call any of the companies listed below.

STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA COMPANY, Denver 1, Colorado

There's Improved Railroading with
National Specialties

Example:

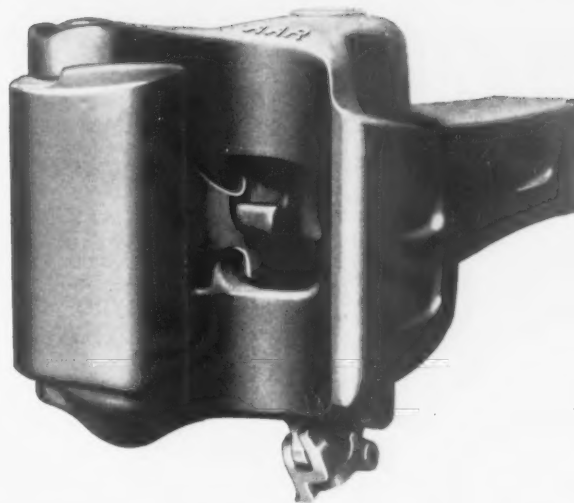
NATIONAL



TYPE

E

Standard for
Freight Service



COUPLERS



The development of the automatic railroad coupler parallels the experience of National as a coupler manufacturer. And today, as always, National couplers meet all AAR specifications for gauging and inspection. Close quality control, unmatched testing facilities, nationwide and international service—spell National coupler leadership. Always look for the name National—the name that *means* couplers.

A.A. 320a

NATIONAL MALLEABLE and STEEL **CASTINGS COMPANY**

TYPE

H

Tightlock for
Passenger Service

*Railway Division Headquarters
Cleveland 6, Ohio*

*International Division Headquarters
Cleveland 6, Ohio*

*Canadian Subsidiary
National Malleable & Steel Castings Company
of Canada, Ltd. • Toronto 1, Ontario*

Established 1868



COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • JOURNAL BOXES

**Motive Power Utilization
Is RSPA Topic**

Improved Motive Power Utilization is the subject for discussion at the 1957 fall meeting of the Railway Systems and Procedures Association to be held in the Constitution Room, Morrison Hotel, Chicago, Tuesday, Wednesday and Thursday, October 8, 9 and 10. The program is as follows.

TUESDAY, OCTOBER 8
10 am

Address: Patrick B. McGinnis, president, Boston & Maine.

How a Centralized Motive-Power Control Bureau Contributes to Efficient Utilization on a Large Railroad, C. J. Haywood, director motive power control bureau, Pennsylvania.

2 pm

Applications of Operations Research to Improved Utilization of Motive Power, Russell L. Ackoff, professor director, and Maurice W. Sasieni, research associate, Operations Research Group, Case Institute of Technology.

How the B&M Uses Budd Rail Diesel Cars, E. K. Bloss, general mechanical superintendent, Boston & Maine.

Utilization of Budd Rail Diesel Cars on the B&O, E. S. Rupp, assistant to vice-president, operation and maintenance, Baltimore & Ohio.

WEDNESDAY, OCTOBER 9
9:30 am

Improved Diesel Schedules, V. B. Gileaves, assistant to vice-president operations, St. Louis-San Francisco.

Mathematical Planning and Scheduling Freight-Trains Shipments on the Union, D. F. Morris, assistant to general manager, and H. R. Soyster, transportation engineer, Union Railroad.

Plane and Fancy Problems, Nelson B. Frye, assistant vice-president, traffic, Capital Airlines.

2 pm

How Preventive Maintenance Improves Motive Power Utilization, Carlton L. Hall, director diesel methods and procedures, New York Central System.

Panel Discussion: What Can Be Done To Get More Out of Motive-Power-Tested Practices Discusses: Are Wider Applications Necessary? Moderator: James H. Heron, superintendent of motive power, Great Northern.

THURSDAY, OCTOBER 10
9:30 am

Design for Utilization, *Design of the Services*: John S. Gallagher, Jr., director of passenger research, New York Central System. *Design of the Facilities*: Alan R. Cripe, director of design, Chesapeake & Ohio.

Uses of New Techniques on the French National Railroads, Pierre Deshayes, general representative for

North America, French National Railroads.

12:30 pm

Address: John Nash, vice-president—operations, New York Central System. Subject: Forward Thinking—Forward Action.

**Franklin Institute
Honors AAR**

The Association of American Railroads will be the recipient of the George R. Henderson Medal at the annual Medal Day ceremonies of the Franklin Institute on Wednesday, October 16,

particularly "In recognition of the many achievements of the Mechanical and Engineering Divisions in the many fields of railway engineering . . ."

**AC&Y Using Truck as
Rolling Repair Shop**

A specially designed International truck, with equipment capable of jacking up a diesel locomotive, is in service on the Akron, Canton & Youngstown as a repair-shop-on-wheels. Capabilities of the unit were demonstrated shortly after the

(Continued on page 12)

SELECTED MOTIVE POWER AND CAR PERFORMANCE STATISTICS

FREIGHT SERVICE (DATA FROM I.C.C. M-211 AND M-240)

Item No.	Month of June		6 months ended with June	
	1957	1956	1957	1956
3 Road locomotive miles (000) (M-211):				
3-06 Total, Diesel-electric	36,317	37,298	220,006	223,897
3-07 Total, electric	643	744	4,153	4,413
3-04 Total, locomotive-miles	39,046	42,206	238,801	254,159
4 Car-miles (000,000) (M-211):				
4-03 Loaded, total	1,614	1,699	9,674	10,158
4-06 Empty, total	929	946	5,682	5,632
6 Gross ton-miles-cars, contents and cabooses (000,000) (M-211):				
6-03 Total in Diesel-electric locomotive trains	109,060	108,652	648,612	644,031
6-04 Total in electric locomotive trains	2,194	2,347	13,096	13,561
6-06 Total in all trains	118,557	122,924	707,190	729,963
10 Averages per train-mile (excluding light trains) (M-211):				
10-01 Locomotive-miles (principal and helper)	1.02	1.03	1.02	1.03
10-02 Loaded freight car-miles	44.2	43.2	42.9	42.9
10-03 Empty freight car-miles	25.5	24.1	25.4	23.8
10-04 Total freight car-miles (excluding caboose)	69.7	67.3	68.6	66.7
10-05 Gross ton-miles (excluding locomotive and tender)	3,247	3,127	3,161	3,085
10-06 Net ton-miles	1,492	1,434	1,439	1,414
12 Net ton-miles per loaded car-mile (M-211)	33.7	33.2	33.3	32.9
13 Car-mile ratios (M-211):				
13-03 Per cent loaded of total freight car-miles	63.5	64.2	63.0	64.3
14 Averages per train hour (M-211):				
14-01 Train miles	18.7	18.4	18.9	18.6
14-02 Gross ton-miles (excluding locomotive and tender)	59,982	57,004	59,029	56,892
14 Miles per diesel-electric unit day (M-240):				
14-01 Road freight units	208.8	—	211.0	—
14-02 Road passenger units	451.5	—	440.4	—
17 Car-miles per freight car day (M-240):				
17-01 Serviceable	46.2	47.8	46.1	47.1
17-02 All	44.3	46.0	44.3	54.3
18 Average net ton-miles per freight car-day (M-240)	949	981	928	960
19 Per cent of home cars of total freight cars on the line (M-240)	109.7	112.1	110.8	112.1

PASSENGER SERVICE (DATA FROM I.C.C. M-213)

3 Road motive-power miles (000):				
3-06 Diesel-electric	19,417	20,214	116,444	121,886
3-07 Electric	1,112	1,212	7,056	7,617
3-04 Total	20,818	22,158	125,365	134,010
4 Passenger-train car-miles (000):				
4-08 Total in all locomotive-propelled trains	216,851	233,868	1,280,397	1,378,271
4-11 Total in Diesel-electric locomotive trains	201,279	213,179	1,180,894	1,248,208
12 Total car-miles per train-mile:	9.91	10.11	9.71	9.86

YARD SERVICE (DATA FROM I.C.C. M-215)

1 Freight yard switching locomotive-hours:				
1-03 Diesel-electric ¹	3,687,882	3,799,446	22,685,111	23,099,272
1-06 Total	3,838,665	4,080,379	23,689,003	24,796,337
2 Passenger yard switching hours:				
2-03 Diesel-electric ¹	233,814	244,068	1,449,018	1,485,243
2-06 Total	260,443	276,150	1,619,301	1,692,923
3 Hours per yard locomotive-day:				
3-02 Diesel-electric	15.1	16.1	15.4	16.0
3-05 Serviceable	15.3	16.0	15.6	16.0
3-06 All locomotives (serviceable, unserviceable and stored)	14.1	14.7	14.4	14.5
4 Yard and train-switching locomotive-miles per 100 loaded freight car-miles	1.63	1.67	1.69	1.69
5 Yard and train-switching locomotive-miles per 100 passenger train car-miles (with locomotives)	0.74	0.73	0.78	0.76

¹ Excludes B and trailing A units

Why More and More Roads are Testing NATIONAL® Cartridge Bearings!



Tests under extreme operating conditions indicate a new standard of bearing performance for freight cars.

A few years ago, the National Cartridge Bearing was only a new concept in solid journal bearing design. Today, it is a reality—with thousands of miles in the toughest kinds of freight car service.

To date, over twenty roads are confirming what our special journal bearing laboratory has found: that the National Cartridge Bearing stands up to greater impact; that it requires very little maintenance; that it provides greatly lengthened life; that it minimizes the chance of hot boxes.

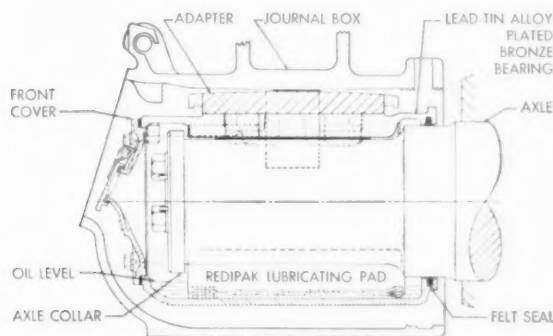
In addition, the National Cartridge Bearing offers several important savings over roller bearings: savings in first costs . . . savings in installation costs . . . savings in removal costs when a wheel change is needed.

If your road is not already testing this "journal bearing of

the future," why not see for yourself what this remarkable new cartridge bearing can do under your particular operating conditions?



Wheel, axle and cartridge sets are made up in advance for assembly into trucks. No bearing work is done on the rip track.

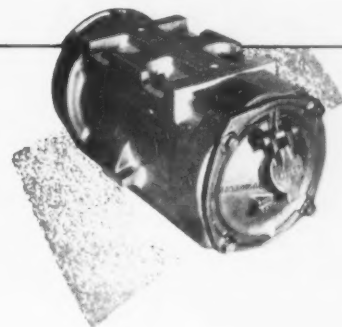


CROSS SECTION OF NATIONAL CARTRIDGE JOURNAL BEARING UNIT

The cartridge bearing encircles the journal. The journal collar is machined off to permit assembly, and a separate collar is secured with cap screws. The cartridge unit, shown with an adapter, which can be used with an integral box or a pedestal side frame, is cast of high strength bronze and plated with a heavy-duty lead-tin alloy. It contains its own lubricating system and is effectively sealed by a lubricated felt ring riding on the conventional dust guard diameter. The lubricating pad is installed when the cartridge is applied to the axle. Oil is contained in the cartridge, not in the box. The usual journal box is not needed.



RAILROAD PRODUCTS DIVISION
530 Fifth Avenue • New York 36, N. Y.



NEWS

(Continued from page 10)

truck was placed in service, when it was used to jack up a heavy-duty flat car in order to make air brake repairs. After repairs were completed, the truck's air compressor went into use to conduct a brake test. The truck, with a 190-in. wheelbase, is equipped with a five-man cab, 4,000-lb capacity lift tail gate, air compressor, two 70-ton air jacks, power steering and power brakes. For emergency repair use, it can also haul three pairs of car wheels or two pairs of mounted diesel wheels to repair sites.

AAR Members Vote Brake Code Revision

Revision of the AAR's publication "Rules for Inspection, Testing and Maintenance of Air Brake and Signal Equipment on Locomotives and Cars" (the Red Book) has been approved by a vote of locomotive- and car-owning members of the Mechanical Division. This was submitted to ballot by the General Committee of the Division after action taken early in July by the Senate committee on interstate and foreign commerce (*Railway Locomotives and Cars*, September, 1957, p. 10).

The Senate committee reported the "power brake bill" (Senate 1386) favorably with an amendment calling for ICC brake regulations to correspond with those of the AAR including "such provisions as may have been adopted prior to enactment [of the Senate bill]." The AAR vote makes the Red Book include the latest brake equipments and maintenance practices. However, no Senate action was taken on the Power brake bill before the end of the last session and nothing further can be done in Congress until January, 1958.

Accompanying the brake code revision was a second letter ballot calling for arbitrary scrapping of axles with journals seriously scored or gouged because of overheating. This requirement was accepted by a vote of car owners although there were 577,258 votes against it. A secondary requirement of this change will be that overheated axles with no surface damage must be inspected with both magnetic particle and ultrasonic methods before being reused. The changes will soon be incorporated in the Interchange Rules and the Wheel and Axle Manual, and expense will be borne by the handling line.

Miscellaneous Publications

FUNDAMENTALS OF WELDING. First of five sections of Welding Handbook, previously published as a single volume, contains in 11 chapters the basic material needed by all associated with welding activities. Where possible, information has been tabulated. *American Welding Society, 33 West 39th st., New York 18. Price, \$9 per volume.*

"PRODUCT RESEARCH AND DEVELOPMENT." 20-page booklet de-

ORDERS AND INQUIRIES FOR NEW EQUIPMENT PLACED SINCE THE CLOSING OF THE SEPTEMBER ISSUE

FREIGHT-CAR ORDERS

Road and builder	No. of cars	Type of car	Tons	Other details
CANADIAN NATIONAL Canadian Car	2	Depressed-center flat	—	To weigh 98 tons each when loaded. For delivery early next year.
CHICAGO, ROCK ISLAND & PACIFIC Company shops	100	Flat	50	50 cars, with riveted frames, to cost approx. \$8,576 each; other 50, with cast-steel frames, approx. \$10,182 each. First quarter 1958 delivery.
DELAWARE & HUDSON Company shops	3 2 1	Well type flat Flat Depressed center flat	60 250 125	Delivery 6 cars expected second quarter 1958.
DENVER & RIO GRANDE WESTERN ACF Industries	80	Covered hopper	70	Estimated unit cost, \$11,000. Delivery second quarter 1958.
ST. LOUIS-SOUTHWESTERN Pacific Car & Edy	25	Insulated box	80	Approx. unit cost, \$14,735. For January delivery.

scribes services offered by the Franklin Laboratories and, under headings "Product Planning and Design," "Materials," "Production," and "Processes," lists specific areas in which the Laboratories are staffed and equipped to perform research and development. *Manager, Information Services Department, Franklin Institute Laboratories, 20th and Parkway, Philadelphia 3.*

FILLER METAL COMPARISON CHARTS. Brand names of 61 companies, 12 AWS-ASTM specifications, and two indexes listing brands and manufacturers names included in 24-page booklet of welding rod and electrode comparison charts. Answers questions concerning classification of Brand X, if Brand X comes within same classification as Brand Y, who makes it, and who distributes it. *American Welding Society, 33 West 39th st., New York 18. Price \$2.*

ingion, W. Va. Position of master mechanic at Huntington abolished. Jurisdiction of J. C. SMITH, general master mechanic, Richmond, extended to include entire Eastern region. Jurisdiction of L. H. BOOTH, general master mechanic Huntington, extended to include entire Central region. F. H. PORTER, general foreman locomotive department, Richmond, given responsibility for both locomotive and car department matters, Richmond division.

Chicago, Burlington & Quincy.—L. E. QUIRIN, district master mechanic, Chicago, appointed shop superintendent, Aurora, Ill.

(Continued on page 14)

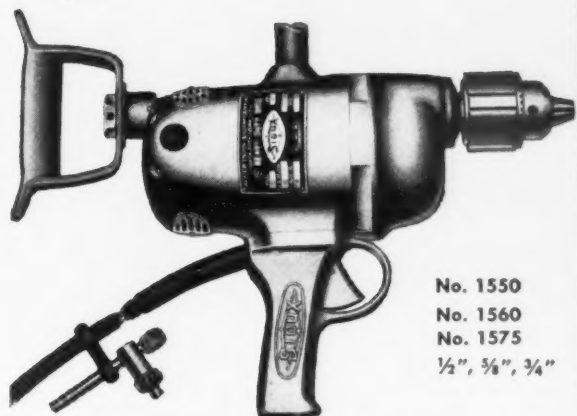
SUMMARY OF MONTHLY HOT BOX REPORTS

Month	Cars set off between terminals with Hot Boxes		Miles per car set off
	System	Foreign	
June, 1953	8,537	15,296	122,771
June, 1954	6,597	9,617	164,202
1955			
June	6,080	10,226	180,666
July	8,086	13,635	133,813
August	8,555	14,358	128,941
September	5,896	10,469	178,649
October	3,966	7,182	271,364
November	2,010	3,972	493,184
December	1,819	3,774	522,444
1956			
January	2,029	4,302	462,029
February	2,570	5,611	341,542
March	2,517	6,212	346,853
April	3,202	6,881	290,626
May	4,672	10,903	196,688
June	6,777	15,125	135,774
July	8,484	16,067	113,573
August	9,891	16,892	113,474
September	6,834	12,629	149,970
October	4,357	8,429	243,505
November	2,650	5,560	359,759
December	2,256	4,436	438,425
1957			
January	3,373	6,121	291,453
February	3,272	6,844	264,538
March	3,164	6,687	307,306
April	3,949	8,447	228,493
May	6,580	12,691	154,387
June	8,285	16,277	115,749

Personal Mention

Canadian National.—*Moncton, N.B.*: BLAIR E. BAYNE appointed supervisor diesel equipment, Atlantic Region. MURRAY D. ATKINSON appointed regional diesel supervisor. ROBERT R. O'BLENIS appointed regional diesel instructor. RALPH T. DUNBAR appointed general foreman, motive power shops; GERARD A. JOHNSON, foreman, and JOHN K. MCKINNON, night foreman, diesel shop.

Chesapeake & Ohio.—H. M. VISE, JR., assistant to general superintendent car department, Richmond, Va., appointed assistant superintendent car department, Grand Rapids, Mich. S. M. FHRMAN, general foreman car department, Columbus, Ohio, appointed assistant to general superintendent car department at Richmond. D. H. RICHMOND appointed assistant general master mechanic, Hunt-



No. 1550
No. 1560
No. 1575
1/4", 3/8", 1/2"

ELECTRIC DRILLS

- Advanced Design
- Balanced Power
- Rugged Construction
- A Size for Every Need
- SIOUX Dependability
- No Drill is Built to Last Longer



ALBERTSON & CO., INC.
SIOUX CITY, IOWA, U.S.A.

ELECTRIC DRILLS • SCREW DRIVERS • SANDERS • GRINDERS • IMPACT WRENCHES • VALVE FACE
GRINDING MACHINES • POLISHERS • PORTABLE SAWS • FLEXIBLE SHAFTS • ABRASIVE DISCS



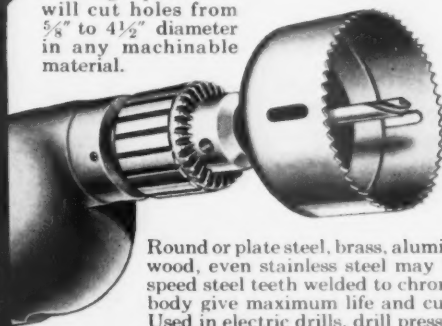
PORTABLE GRINDERS

A Dependable, Heavy Duty Tool for Grinding, Buffing, Wire Brushing. 5" and 6" Wheel Diameters. Carefully Balanced for Easy Handling.

Sioux Quality Throughout.

High Speed HOLE SAWS

SIOUX Hole Saws with high speed teeth will cut holes from 5/8" to 4 1/2" diameter in any machinable material.

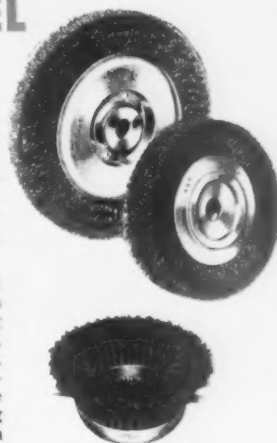


Round or plate steel, brass, aluminum, bronze, wood, even stainless steel may be cut. High speed steel teeth welded to chrome vanadium body give maximum life and cutting ability. Used in electric drills, drill press, or lathe.

WIRE WHEEL BRUSHES

Durably built of special brushing wire with wide face, even trim, perfect balance. Designed for heavy duty cleaning, removing, deburring, de-scaling, roughing, buffing, and polishing.

Torque or saucershaped brushes are fast workers for body repair, removing paint, scale or corrosion, cleaning welded joints, etc. Used with Sioux flexible shafts or portable tools the broad brushing area cleans large areas in less time.





Cut Down on Cleaning Time in Diesel Interiors

Cleaning engine exteriors, floors, walls need not be a time-consuming job. You can cut down on time and manpower with Magnus Diesel Magnusol.

Safe and Sure . . . Magnus Diesel Magnusol is a fast-working easily applied cleaner. Just mix the concentrated cleaner with water . . . spray it on all surfaces to be cleaned . . . After soaking for a short time, flush the cleaner and dirt away with water. Surfaces are really clean! Diesel Magnusol is harmless to paints, metals and personnel and is non-toxic and non-flammable.

For every dirty job in all railroad maintenance there is a specialized Magnus material, machine, method to speed up down time, clean more efficiently. Write for your copy of the Magnus Railroad Handbook to Magnus, 77 South Ave., Garwood, N. J.



RAILROAD DIVISION
MAGNUS CHEMICAL CO., INC.

a world-wide organization specializing in cleaning and protection of all surfaces

PERSONAL MENTION

(Continued from page 12)

Delaware & Hudson.—*Colonie, N.Y.:* ABRAM C. ALLEN, master mechanic Pennsylvania-Susquehanna Division, appointed master mechanic, system. AUGUST N. BAMBICHLER appointed assistant master mechanic, Saratoga-Champlain Division. THOMAS J. BRADLEY, assistant general supervisor, appointed diesel supervisor. *Oneonta, N.Y.:* CLAUDE E. GREGORY, general car foreman, appointed assistant master mechanic, Pennsylvania-Susquehanna Division.

Elgin, Joliet & Eastern.—ROBERT E. BRAY appointed car foreman, Kirk Yard, Gary, Ind. LOUIS J. VERBICH appointed car foreman at South Chicago, Ill. ORRIN R. BURROUGHS appointed car foreman at Joliet, Ill.

Erie.—LAWRENCE E. SCHUFFTE, supervisor of car repairs at Cleveland, O. promoted to assistant superintendent, car department—territory west of Cuba, N.Y. Headquarters, Cleveland. DAVID H. DECKER, superintendent of car shops, Susquehanna, Pa., promoted to supervisor of car repairs—Cuba, N.Y., and east. Headquarters, Susquehanna.

Louisville & Nashville.—*Corbin, Ky.:* J. W. STEPHENS appointed master mechanic. E. O. ROLLINGS, JR., foreman, diesel parts repair, appointed general foreman succeeding Mr. Stephens.

Missouri Pacific.—L. W. MARTIN appointed master mechanic, Settegast Terminal, Houston, Tex. Division assignments for road master mechanics as follows: *Osawatomie, Kan.* A. J. DANIEL, Central Kansas and Colorado divisions. *Kansas City, Mo.* E. E. DENT, Eastern, Omaha, Northern Kansas, Joplin and White River divisions. *Coffeyville, Kan.* J. C. DIETRICH, Southern Kansas, Central and Wichita divisions.

New York Central.—RAYMOND F. SWANSON, shop and equipment inspector at Collinwood, Ohio, appointed supervisor, material tests, Technical Research Department.

Norfolk & Western.—W. O. HUNT, JR., mechanical inspector, office of general superintendent motive power, Roanoke, Va., appointed assistant enginehouse foreman at Shaffers Crossing, succeeding W. PALMER KELLEY, retired. M. M. EARLY appointed mechanical inspector at Roanoke.

Pennsylvania.—J. F. HILDABRAND, assistant to supervisor methods and cost control, appointed foreman, methods and cost control, Altoona (Pa.) Works.

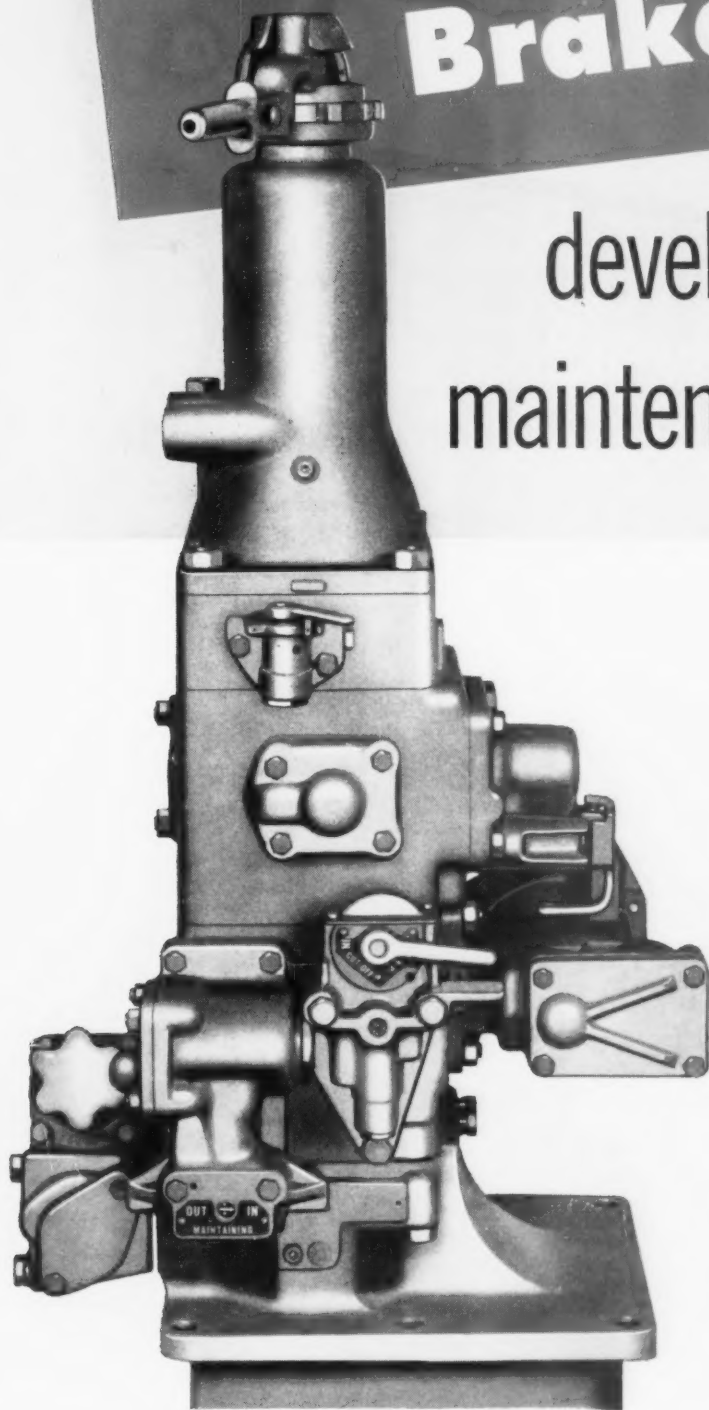
St. Louis Southwestern.—T. A. TENNYSON appointed engineer of tests and sanitation at Mt. Pleasant, Tex., succeeding H. W. VAN HOVENBERG retired.

Southern.—*Spencer, N. C.:* HENRY J. ELROD, appointed general foreman. Formerly general foreman car repairs at Macon, Ga. JOHN J. DEMSHOCK, general

(Continued on page 18)

DS-24-M Brake Valve

develops outstanding
maintenance economies



THE Brake Pipe Pressure Maintaining Feature provides more uniform distribution of braking throughout the train. It develops these outstanding maintenance economies—

1. Less rigging maintenance and fewer damaged brake heads.
2. More uniform brake shoe wear.
3. Reduced wheel damage from overheating at front end of train.

These economies can be realized on 24-RL Brake Valves now in service by substituting a Conversion Filling Piece for the existing filling piece.

Write for our Circular Notice No. 1130 which gives complete details.

**Westinghouse Air Brake
COMPANY**

AIR BRAKE DIVISION **XX** WILMERDING, PENNA.

CLEVITE

MAKES IT!

World's Largest, Most Experienced Independent Manufacturer of Sleeve-Type Bearings (One Million Bearings per Day)

It took a rare combination to create the Clevite Sealed Sleeve Bearing Cartridge. Cooperation and operating experience of railroaders plus concentration of the vast Clevite experience, research and laboratory facilities and manufacturing processes that produce millions of bearings for industry and military forces. The results—a change-over journal bearing that is built to exceed AAR requirements for “hot box” elimination and meets the high quality-with-economy standards of Cleveland Graphite Bronze Company Division of Clevite Corporation, Cleveland 10, Ohio.

Largest Supplier of Stabilized Trucks

(Over 450,000 car sets of
Barber Stabilized Trucks Sold)

What's more, you'll get the hard-earned railroading experience, engineering skill and continuing maintenance follow-up that have made Barber a trusted name

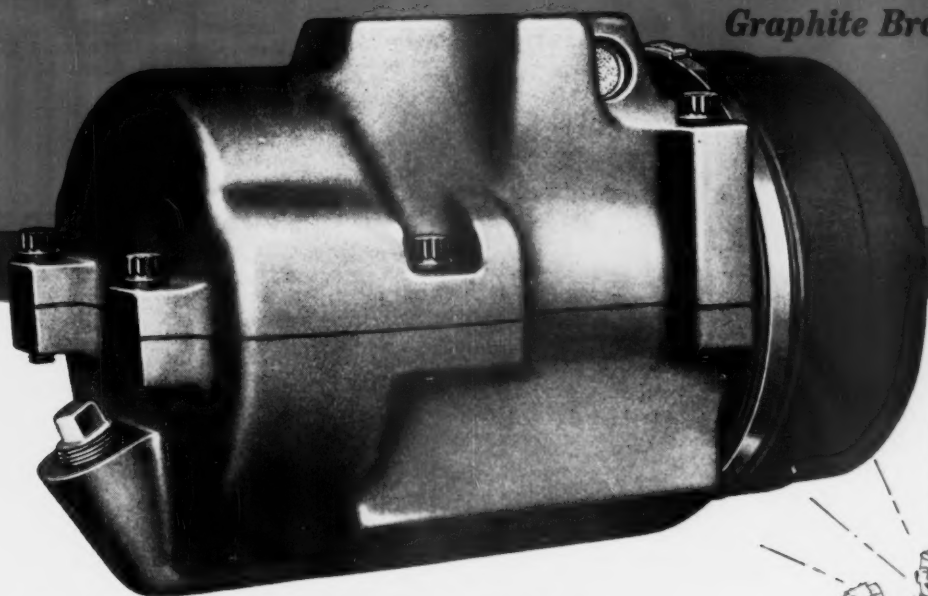
STANDARD CAR TRUCK COMPANY

DISTRIBUTES IT!

wherever freight cars roll. You'll deal with representatives who know your requirements and how to meet them economically to lick the “hot box” headache.

...announces THE HIGH PERFORMING, ECONOMICAL CHANGE-OVER JOURNAL BEARING FOR AMERICA'S TWO MILLION FREIGHT CARS

*(A development of Cleveland
Graphite Bronze Company)*



YOU SAW IT DEMONSTRATED AT CHICAGO

... It's the answer to railroads' *hottest* problem! Simple to install—requires less modification, so it's more economical. And when installed, it's a permanent and soundly engineered conversion. Tested by the AAR and approved for limited application in interchange service.



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**SEALED SLEEVE
BEARING CARTRIDGE**

Write or Phone Distributor: Standard Car Truck Co., 332 S. Michigan Ave., Chicago 4, ILL.
(In Canada: Consolidated Equipment Co., Ltd., Montreal 2)

In DIESEL CLEANING, too



Oakite gives you low-cost end results

RESULTS TALK! So if you're after genuine savings in diesel cleaning check the *results* Oakite delivers.

Take for example, the cleaning of diesel interiors. One Class 1 Road had been using an alleged "low-cost-per-pound" material for this critical job. Then they tried Oakite Composition No. 72—costing peanuts more per pound. Here are the *end results*:

In one month—washing 300 diesels—Road cut their cleaner poundage from 1200 lbs. to 337 lbs. They cut their monthly cleaner cost from \$144.00 to \$57.63. And they got better cleaning, better rinsing.

Another Road, using this same Oakite 72 for washing diesel exteriors, saves over \$800.00 a month. They use 5.6 gallons at 2 oz./gal. as against 20 gallons at 6 oz./gal. per diesel. These figures speak for themselves. Results tell the true story.

Booklet F-8055 describes the many specialized Oakite materials and methods that guarantee economical railroad maintenance cleaning. Send for your copy to Oakite Products, Inc., 46 Rector Street, New York 6, New York.



gives you the important advantage . . .
LOW-COST END RESULTS

Export Division
Cable Address: Oakite

RAILROAD DIVISION

PERSONAL MENTION

(Continued from page 14)

foreman, appointed general foreman car repairs. *Hayne Shop, Spartanburg, S. C.*: JOHN O. GERSON, JR., appointed general foreman car department. Formerly production and material control engineer at Knoxville, Tenn. *Coster Shop, Knoxville*: JACK P. SATTERFIELD appointed cost control engineer. JACK R. BARKELY appointed production control engineer.

Union Pacific.—R. J. BERTI, assistant electrical engineer, Omaha, Neb., appointed electrical engineer succeeding D. G. WILLIAMS, retired.

Obituary

CLARENCE C. CORNELIS, superintendent of shops, Chicago, Burlington & Quincy, at Aurora, Ill., died August 14.

Supply Trade Notes

EX-CELL-O CORPORATION.—Robert H. Watts has been transferred from Detroit to the company's new warehouse and plant facility in Black Mountain, N. C. Mr. Watts will represent the railroad sales division throughout the southeastern territory.

THOMAS A. EDISON INDUSTRIES, EDISON STORAGE BATTERY DIVISION.—Charles F. Farrell has been appointed Seattle district manager.

GOULD-NATIONAL BATTERIES, INC.—K. A. Vaughan, export manager, has been appointed also northeastern regional manager for the industrial division.

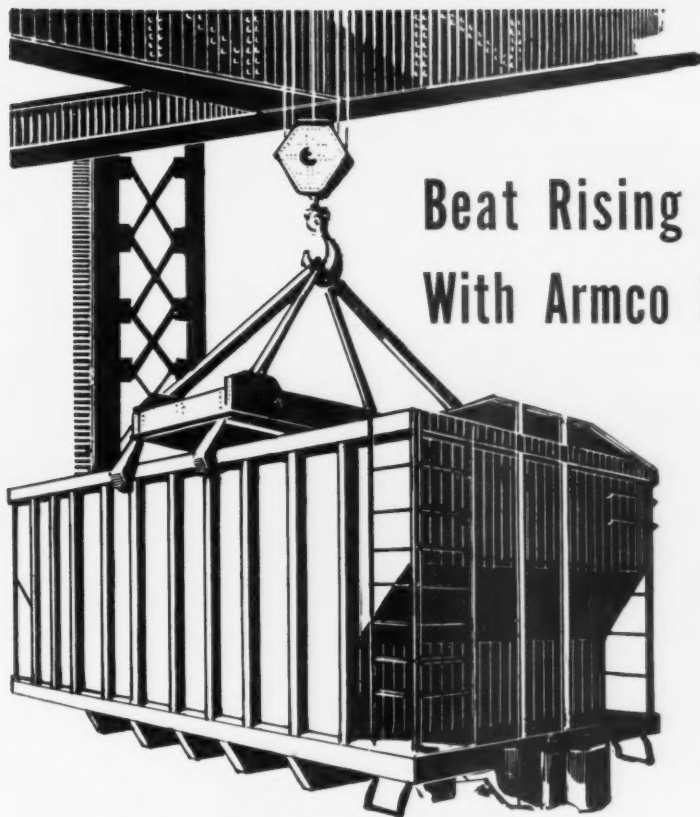
PEERLESS EQUIPMENT, DIVISION OF POOR & CO.—J. C. Fennelly Company, San Francisco, has been appointed West Coast representative.

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY (CANADA) LTD.—R. G. Hudson, works manager of the Lachine, Que. plant, has been appointed vice-president, succeeding J. C. Lessard, resigned.

WESTINGHOUSE ELECTRIC CORPORATION.—J. A. Walker has been appointed area sales manager for the newly created transportation and maintenance sales area in the Chicago district. Mr. Walker will be responsible for the sale of Westinghouse electrical equipment to railroads and railroad suppliers and for the sale of maintenance services on electrical equipment for the company's Chicago repair shop.

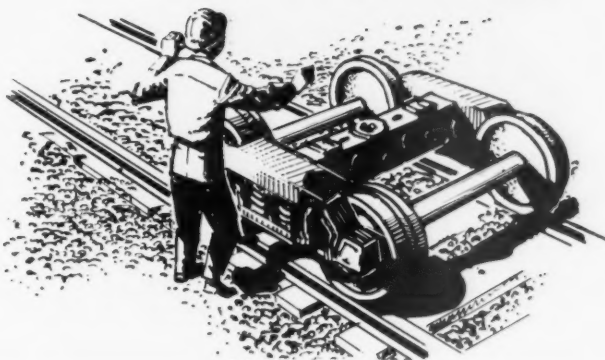
GENERAL AMERICAN TRANSPORTATION CORPORATION.—General American has completed a \$750,000 contract for the repair of 100 passenger cars.

(Continued on page 52)



Beat Rising Maintenance Costs With Armco High Strength Steel

**... it extends
car life,
cuts down
on repairs**



Armco Steel Corporation

1947 Curtis Street, Middletown, Ohio

Send me more information about Armco High Strength Steel.

NAME

TITLE

COMPANY

STREET

CITY ZONE STATE

Armco High Strength Steel keeps car maintenance costs low and cuts time-out-of-service in two ways:

1. Used in the same thicknesses as standard structural steel, it supplies greater strength to resist mechanical damage, shock and vibration—helps cars serve much longer before shop work is required.
2. This durable steel offers 4 to 6 times the atmospheric corrosion resistance of mild steel. The metal actually lasts longer in service.

Alternate Benefit

If you prefer to gain lighter car-weight and greater load-carrying capacity, Armco High Strength Steel offers a second revenue-boosting possibility. You can reduce thickness of car parts without sacrificing service life because of this metal's greater strength and corrosion resistance. Result: More cars per train.

Whether you are interested in reduced maintenance and longer car life, or bigger payloads, it will pay you to investigate low-alloy Armco High Strength Steel. Just fill in and mail the coupon for more information.

ARMCO STEEL CORPORATION

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SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION



Dial Type Operating Conveniences

help the operator improve his performance



Ask the man at the machine. He'll tell you that built-in operating conveniences have a direct tie-in with costs. For example, consider a much appreciated Dial Type convenience like identification disks on control knobs. They jog the operator's memory; help him avoid wrecks between the cutter and work or fixture. Other CINCINNATI® Dial Type operating conveniences include:

Push-button selection of spindle speeds: in increasing or decreasing steps

Power feed change: in increasing or decreasing steps

Independent, directional controls: with palm-fitting plastic knobs

Dynapoise chatter-damping overarm: greatly reduces the noise of cutting action

Safe to operate: all hand cranks automatically disengaged when power feed or rapid traverse is engaged

Complete rear controls (Plain and Universal machines)

These are but a few reasons why Dial Type Milling Machines are tops with the operator. Want more information? Look in Sweet's Machine Tool File for brief specifications; complete data in catalog No. M-1915-2.

**THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO**

Brief Specs, Dial Type Milling Machines

DIAL TYPE LINE		table traverse	main drive	automatic table cycles available
No. 2	Plain	28"	10 hp	yes
	Universal Vertical			no
No. 3	Plain	34"	15 hp	yes
	Universal Vertical			no
No. 4	Plain	42"	20 hp	yes
	Universal Vertical			no



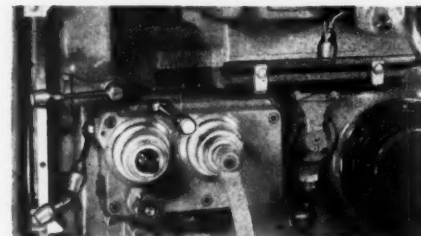
Identification disks on all control levers



Push-button selection of spindle speeds



Power selection of feeds, $\frac{3}{4}$ to 90 ipm



Rear operating controls are duplicates of those located at front of machine. (Plain and Universal styles)

CINCINNATI

MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • SPECIAL MACHINE TOOLS • METAL FORMING MACHINES
HARDENING MACHINES • CUTTING FLUID • GRINDING WHEELS



Ready for the road at the rate of twenty per day are these 70-ton hopper cars coming out of the paint building at the end of the production line in the Norfolk & Western's new Roanoke, Va., car shop.

New Shop Solving N&W Car Problems

Roanoke car shop is long-term solution to building and repair for busy coal road's 63,000-car fleet which may expand still more with continuing coal boom.

A few years ago the Norfolk & Western mechanical department was asked by management to project its new car and heavy car repair programs over a 10-year period. When this was done, it was found that the car shop at Roanoke, Va., did not have sufficient capacity to handle the work which could be anticipated. The result was management's decision to build a new car shop at Roanoke.

Construction of this shop is nearly completed. Production of new cars has been underway in the shop

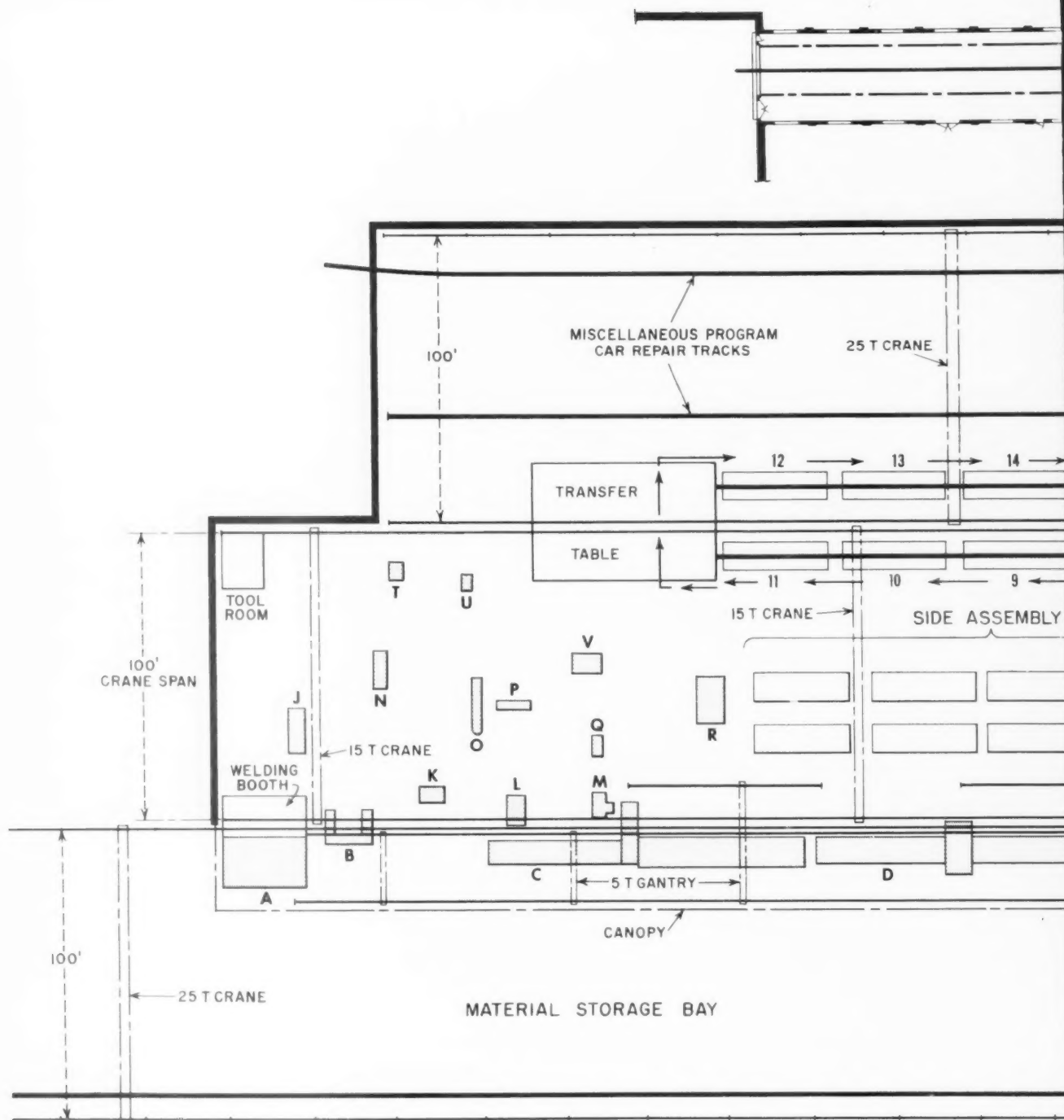
since late last year. It was necessary to locate the new shop on the same land that the former car shop had occupied, and this meant that the project involved the simultaneous dismantling of old structures and construction of new ones, and continued car production.

The shop consists of three parallel bays, each 600 ft or more long.

Attached to the end of the last bay is a 450-ft, single track paint shop. The total area under roof is approximately 150,000 sq ft. In addition, there is approximately 45,000 sq ft of material storage area with overhead cranes but without a roof. The entire shop layout covers approximately 10 acres.

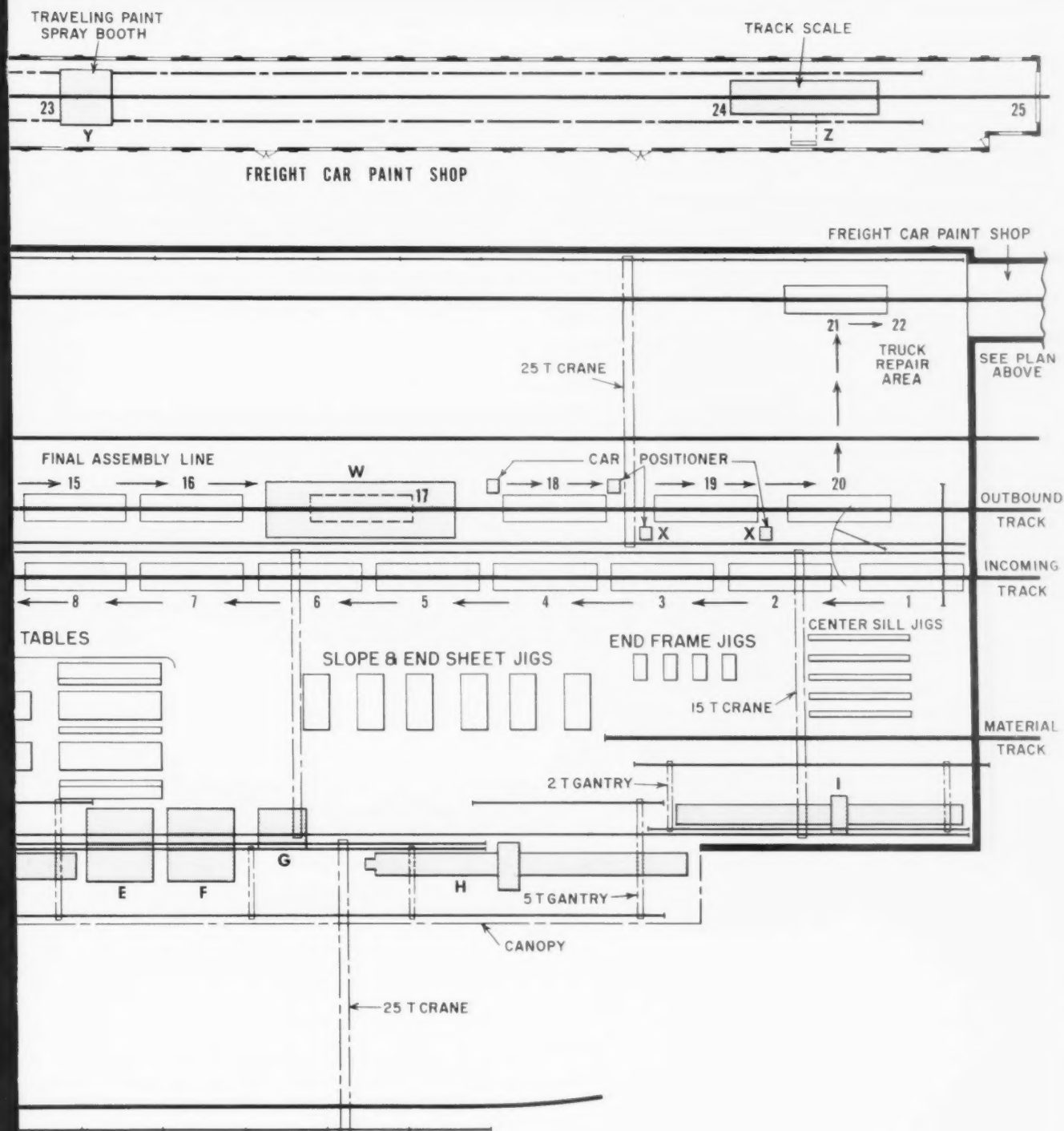
(Continued on page 24)

For Car Shop Plan and Details of the Job It Is Now Doing, Turn Page ►



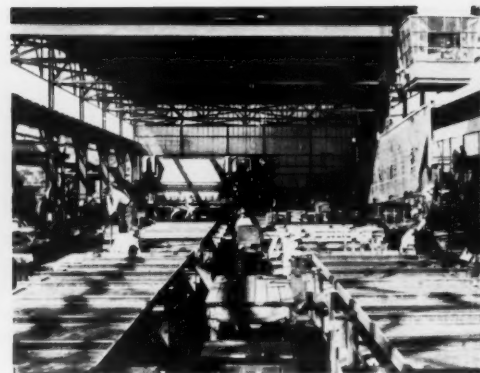
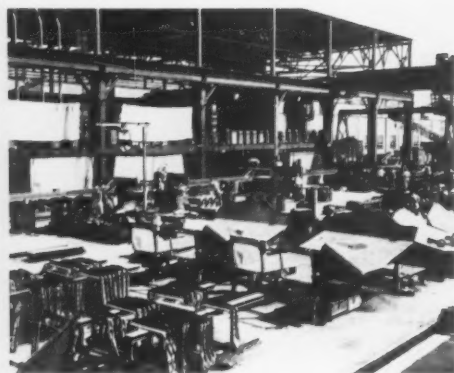
IMPORTANT SHOP MACHINES

- | | | |
|---|--|--|
| A Angle Shear—Hilles & Jones Co. | H 400-Ton Beam Punch—Thomas M. M. Co. | Q Double-Head Punch & Shear—Wm. Sellers Co. |
| B Gate Shear—Hilles & Jones Co. | I 350-Ton Gap Punch—Hilles & Jones Co. | R 800-Ton Press Brake—Cincinnati Shaper Co. |
| C 400-Ton Gap Punch—Hilles & Jones Co. | J Punch and Shear—Henry Pels & Co. | T Rail Straightener Press—Hilles & Jones Co. |
| D 1,000-Ton Multiple Punch—Thomas M. M. Co. | K Gate Shear—Long & Allstater Co. | U Punch—New Doty Manufacturing Co. |
| E Oxweld Cutting Machine—Linde Co. | L Horizontal Punch—Long & Allstater Co. | V 250-Ton Hydraulic Press—Lake Erie Eng. Corp. |
| F Oxweld Cutting Machine—Linde Co. | M Single-End Punch—Long & Allstater Co. | X Car Positioner—Pandjiris Weldment Co. |
| G 600-Ton Press Brake—Cincinnati Shaper Co. | N 25-In. Beam Punch—Hilles & Jones Co. | Y Traveling Paint Spray Booth—DeVilbiss Co. |
| | O Punch & Shear—Long & Allstater Co. | Z Track Scale—Fairbanks, Morse & Co. |
| | P Single-End Punch & Shear—Wm. White Co. | |



HOPPER CAR ASSEMBLY OPERATIONS

- 1 Place underframe assembly on temporary shop trucks. Ream.
- 2 Ream.
- 3 Drive diagonal braces, bolsters, body side-bearing supports, and end sills.
- 4 Apply end-post zees, AB valve, brake cylinder and reservoir. Drive gussets.
- 5 Apply draft gears, end-post zees, and end floor assemblies complete with door frames and hopper sheets.
- 6 Apply center assembly complete with cross rides and longitudinal hoods.
- 7 Drive draft gear retainers, and the center floor assembly. Fit longitudinal hoods to end floors. Apply hand brake.
- 8 Weld center area of car.
- 9 Weld center area of car.
- 10 Hang sides.
- 11 Ream sides.
- 12 Drive.
- 13 Drive.
- 14 Drive. Apply brake rod and train line. Apply hopper doors and fit up with hinges, locks and spreaders.
- 15 Drive hopper doors. Apply body brake levers, brake chain and rods.
- 16 Complete branch pipe and retainer application.
- 17 Shot blast exterior of sides.
- 18 Weld floors, sides, hoppers and top side angle (right side).
- 19 Weld floors, sides, hoppers and top side angle (left side).
- 20 Apply coupler, angle cocks, uncoupling levers and remove completed body from shop trucks.
- 21 Apply car cement to underbody and interior of body.
- 22 Place car on trucks and paint trucks.
- 23 Spray paint exterior of car.
- 24 Weigh and stencil.
- 25 Final inspection.



Production line starts (left) with placing of underframe assembly on shop trucks. Subassembly operations are located so as to feed their output directly into the assembly line where components are applied to cars. High cross-ridges on the H-10 carstake the place of the cross-beams (center). Fabrication, subassembly and as-

sembly operations in the new shop are covered with gantry, pedestal and or overhead traveling cranes. Side assembly tables (right) produce last major subassembly to be applied to the budding hopper car. Note that the walls of the fabrication shop in the background are corrugated glass from just above the floor to the roof.

The shop is equipped to construct or give heavy repairs to open-top, box, flat, and company service cars. Its capacity is 20 new or heavy repair cars per 8 hr day, while at the same time carrying on miscellaneous freight car repair work. The main shop consists of two 100-ft wide crane bays each 600 ft long, and one 660-ft crane bay also 100 ft wide. Over the 600-ft x 100-ft material storage bay are located two 25-ton overhead traveling cranes. In the center 660-ft x 100-ft fabricating and assembly bay are four 15-ton overhead traveling cranes. In the 600-ft x 100-ft assembly and repair shop are two 25-ton overhead cranes. Also there are eight 5-ton and two 2-ton traveling gantry cranes servicing heavy machine tools.

Numerous pedestal and jib cranes are located throughout the shop area to serve specific fabricating and assembly operations. A 5-ton monorail hoist moves shop trucks back to the first assembly line position. The fabricating shop is equipped with machine tools of sufficient capacity to supply almost all of the fabricated material for new car and repair programs at this shop; as well as supplying car repair material for other N & W car repair operations.

The 20-position assembly line consists of two parallel tracks, each 475 ft long, connected at one end by a 30-ton, 65-ft Whiting transfer table. Along the last half of this line is a 70-ft shot blast booth for cleaning rust and scale from cars, and two pairs of positioners for rotating car bodies to permit

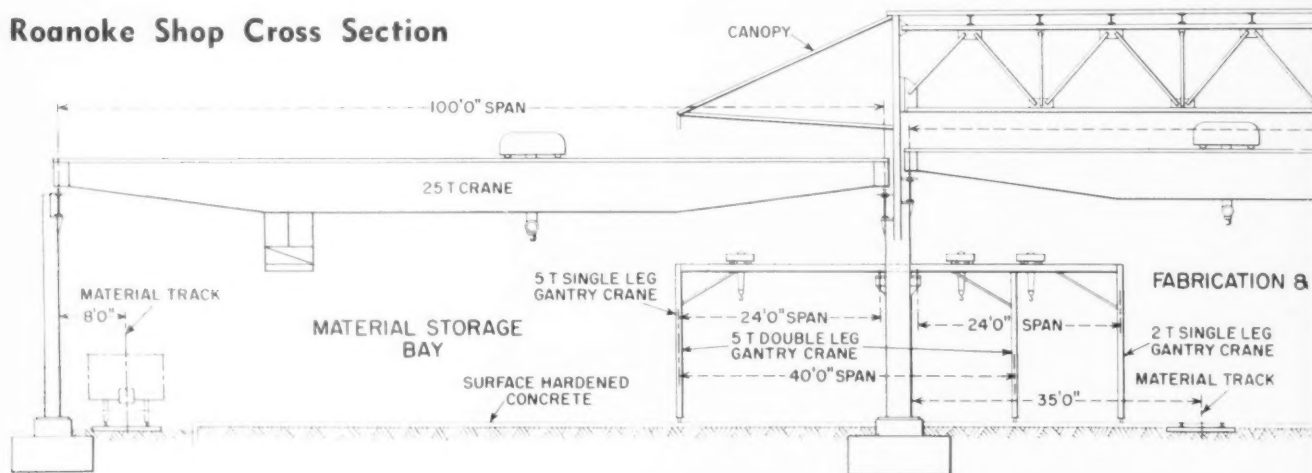
downhand welding. Seven car pullers are used for moving cars through the assembly line positions and through the paint shop.

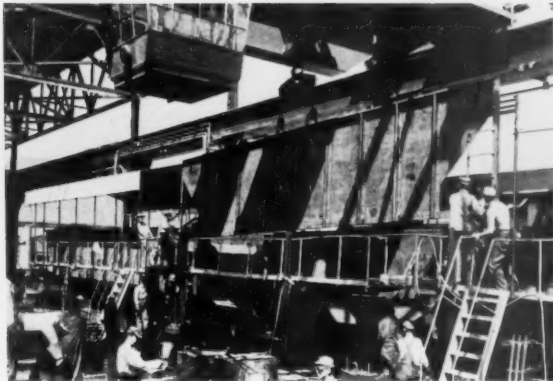
Paint Shop

The nine-position freight car paint shop is 31 ft wide and 450 ft long. It has a DeVilbiss traveling paint spray booth, a Fairbanks track scale for weighing cars, and facilities for car stencilling.

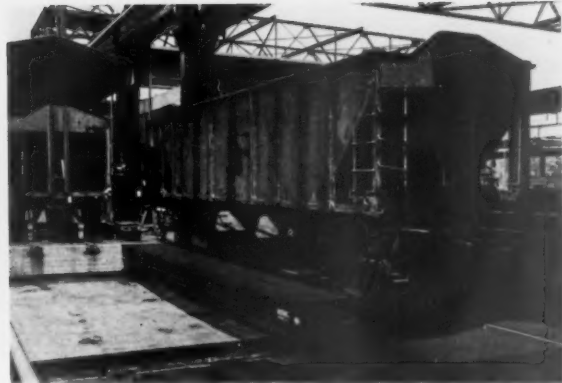
Modern wash rooms and locker facilities for 625 men are placed in a brick building with glass block windows, thermostatically-controlled unit heaters, and glazed-tile inside walls and shower stalls. All wash fountains are of stainless steel. Drinking fountains and toilet facilities are located throughout the shop area.

Roanoke Shop Cross Section





Side application is handled with one of the four 15-ton overhead cranes in the assembly and fabricating shop. N&W uses low-alloy, high-tensile steel for the sides, floor and hoppers.



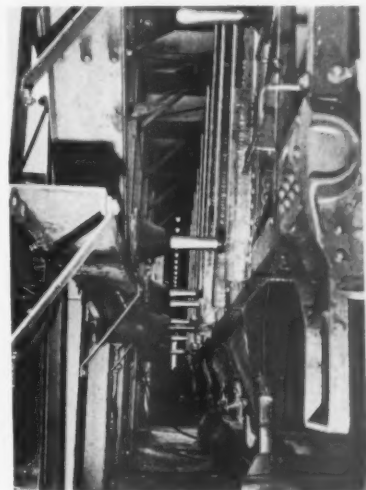
Ready for riveting, a completely reamed car moves over on Whiting transfer table. Reverse flow on last half of the assembly line brings shop trucks back to initial assembly position for another car.

The main shop building has brick and corrugated actinic glass walls. The brick extends up 5½-ft above the foundation and the wire-reinforced corrugated glass extends up the remaining 40-ft to the eaves. The paint shop is a brick and concrete block structure with metal-sash windows and overhead rolling doors. The floor throughout the shops and in the material storage bay is a surface-hardened concrete. Car assembly tracks are lined with scaffold supports mounted on 15-ft centers, and these tracks are placed in gravel ballast filled and tamped flush with the shop floor.

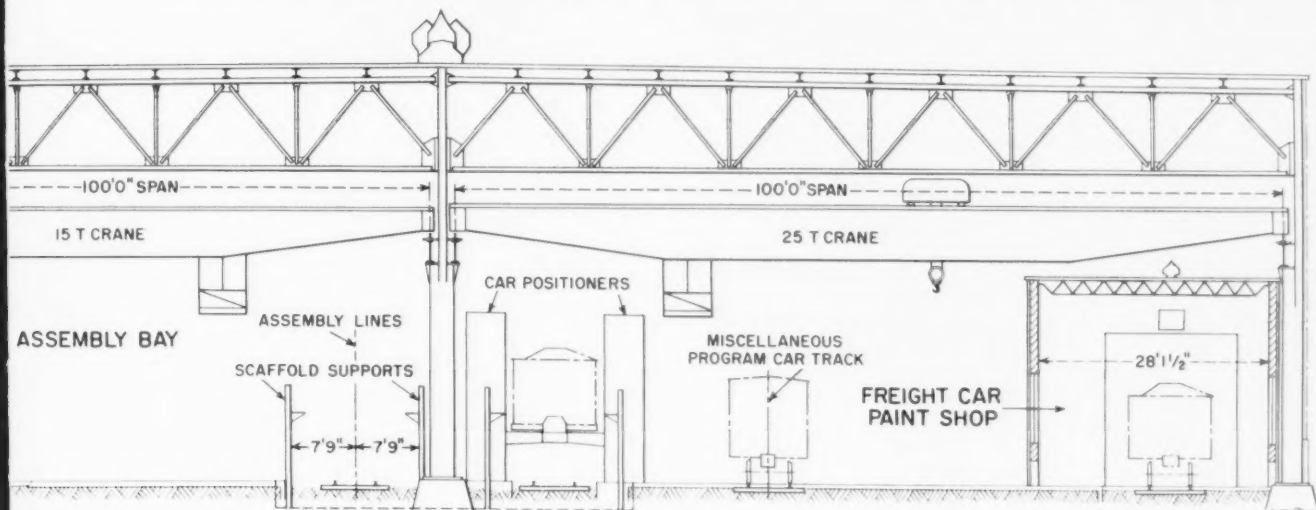
Piped into service outlets throughout the shop are oxygen, natural gas, acetylene, compressed air, steam and water. The local utility feeds 33-kv, 3-phase, 60-

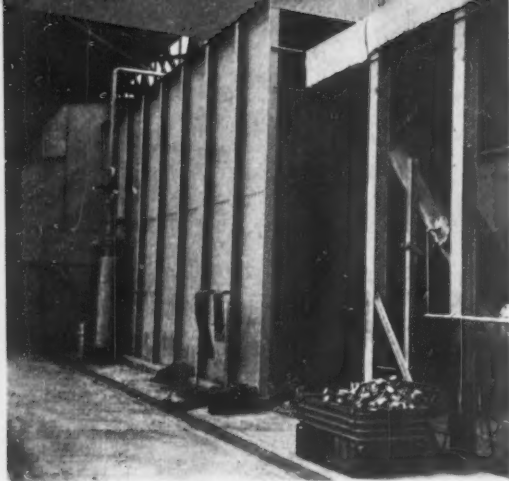
cycle power to a single-circuit unit substation where it is transformed to 4,160-v. Three 500-kva power centers, conveniently located at shop load centers, reduce the 4,160-v to 480-v for shop machinery and cranes, and 277-v for lighting. Distribution to the assembly lines is through Westinghouse plug-in bus duct. Overhead cranes are fed through General Electric Type TK trolley busways. Illumination is provided with high-efficiency industrial-type fluorescent fixtures. Individual welders are used throughout the shop. Both single phase straight a-c and three-phase rectifier types are used.

The plans for this shop, started in 1950, were completed in 1953. Construction started in 1955 and the first car was turned out of the shop in November, 1956. The en-

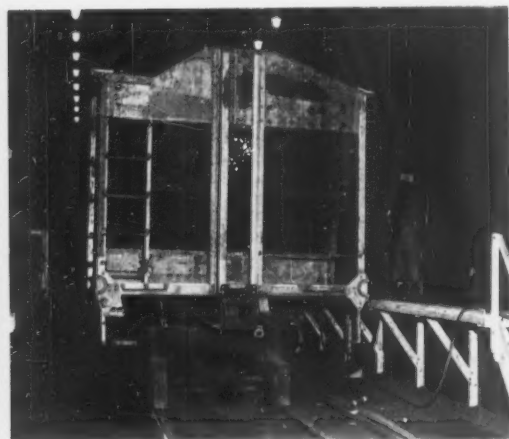


Air-cylinder clamping station holds sides and hopper floors in position so they can be accurately tacked prior to final welding. Riveting has all been completed at this point.



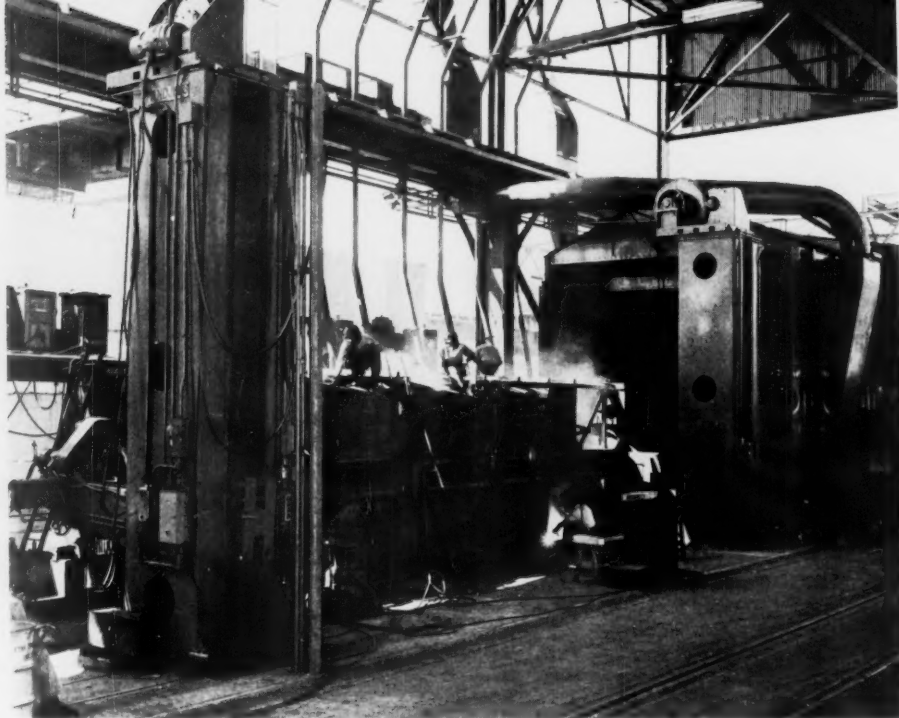


Shot blast booth is 70-ft long. Completely riveted and tack welded car is cleaned in this Pangborn unit prior to going on down the line for finish welding, undercoating, and finally to the paint building.



Metal pellet cleaning of the outside and inside of the hopper body is completed rapidly in this Pangborn booth.

Truck assembly position has side frames feeding in on sloped rack over wheel sets. Bolster assembly is back of crane pedestal. Trucks are moved over to next track leading to paint building before body goes on them.



Two adjacent sets of Pandjiris welding positioners rotate the car to one side and then to the other so that all of the final hand and machine welding can be done in the downhand position. Shot-blast booth is to the right and the initial assembly line positions are just beyond the top of the rotated car in the positioner.



tire facility will be completed during 1958.

The N&W owns approximately 51,000 open-top cars, 10,000 box cars and 2,000 other cars of various types. It is to protect this investment and to provide additional car capacity that the new shop has been built. Protecting such an investment by proper maintenance is tremendously important for the successful operation of the N&W. Unlike many railroads, three cars out of every four that the N&W handles are its own equipment loaded on its own lines. Since most

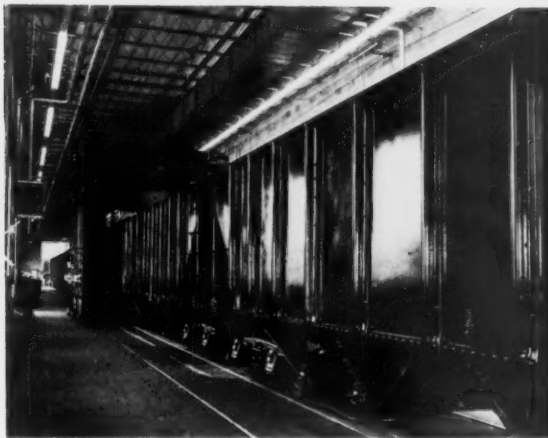
of its cars are at home most of the time, this does simplify some maintenance problems, according to N&W officers, but does not solve them automatically.

Repair Program

It is the N&W policy in coal-car maintenance to build or buy a group of new cars, operate them until running repair costs become excessive, and then call in the entire group for heavy repair. The thing which normally limits the usefulness of open-top cars in coal

service is corrosion of body sheets. Down through the years, the N&W utilized first copper-bearing steel, and more recently low-alloy high-tensile steel, as solutions to the problems of body corrosion.

Usually the N&W's heavy repairs involve the application of complete new body sheets to the car's underframe. It has been the road's finding that most underframes are capable of having one additional body applied before corrosion has so damaged the underframe that it is not economical to continue this type of repair.



DeVilbiss traveling booth uses DuPont steam spray application method. Cars are undercoated in the car shop prior to coming into this 450-ft paint building where they get the single coat of direct-to-metal paint.



Weighing and stencilling are completed inside the paint building. Note that rails for paint spray booth extend down past this Fairbanks-Morse scale along with the continuous exhaust duct on the shop ceiling.

According to C. S. Patton, assistant superintendent motive power—car, "If railroad cars are to be given this type of repair . . . it is absolutely essential that adequate facilities are provided so that the job may be done economically.

The average shop track for running repair, or rip track, is definitely no place to do a program job involving extensive fabrication, subassembly and assembly work."

On a still larger scale, the studies by the N&W's mechanical depart-

ment led to the decision that the N&W could not do without the new Roanoke car shop. It is turning out 20 new cars a day and soon will be turning out some heavy repair cars too. Roanoke shop is meeting coal boom's increasing pace.

What's New About the H-10?

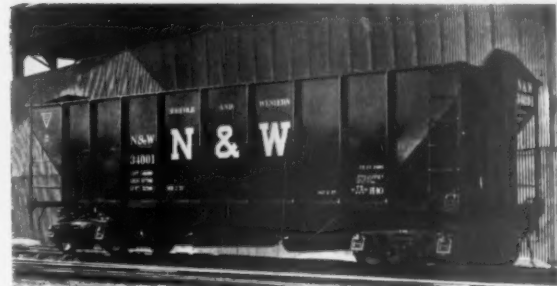
Appropriately, the first cars to be produced at the Roanoke shop were for the road's coal traffic. One unique feature about the 5,500 Norfolk & Western 70-ton, H-10 hoppers now built or authorized is the double slope in the end floor sheets of the car. The N&W has experienced difficulty with bulging of the vertical end sheets in its older hoppers. Attempts to correct this with additional end posts have not been completely successful, and one aim in the design for these new cars was to cut the end sheet height.

To keep the overall car length, height and capacity the same as those of earlier models while reducing the end-sheet height, the inside width was increased and the double slope was put in the floors. The floor runs at an angle of 45 deg from the end sheet to the top of the bolster (actually end sheet and upper floor are one piece), and then at the standard 30 deg from that point to the hopper opening.

An innovation in these cars is the absence of diaphragms. The N&W is relying entirely upon the high, stiff cross ridges to carry the structural loads which normally are carried through diaphragm web plates.

Another unique structural detail is the gusset plates on top of the center sill under each of the cross ridges and between the bolsters and end floor sheets. These gussets are welded in place and resist in shear loads resulting from the acceleration of the car body during impacts.

The N&W uses a continuous side sill angle from end to end of the car, a 5 x 3½ x ½-in. angle. Center sills are 41.2 lb AAR Z-sections and the bolsters are fabricated from 95-lb 20-in. I-beams. The N&W uses cast steel side braces, and has designed a special steel corner casting which serves as a connection between the side sill, end sill, corner post and diagonal brace while simultaneously providing an uncoupling lever bracket. All of these cars are being equipped with



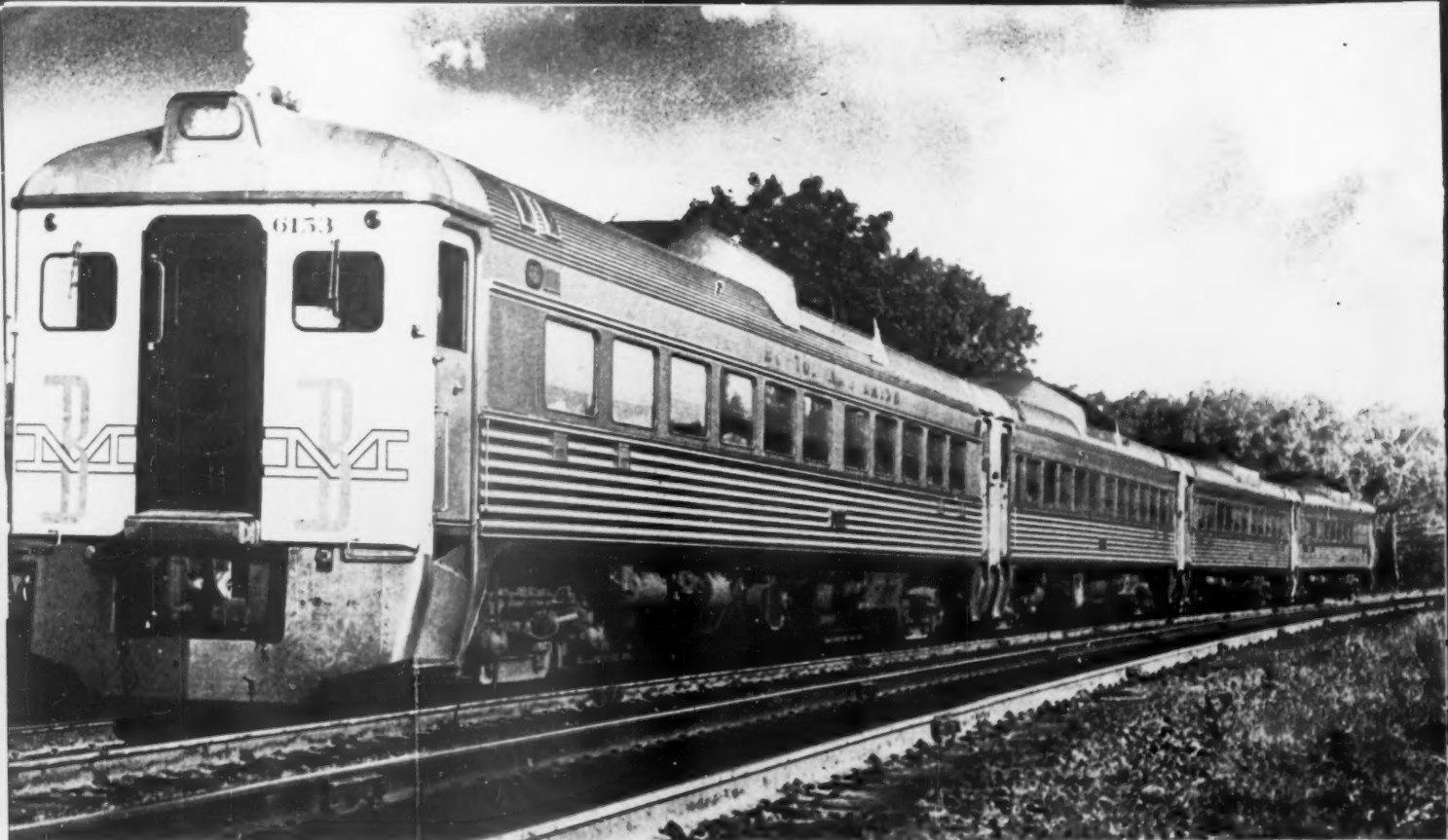
journal lubricators and multiple wear wrought steel wheels.

The N&W uses low-alloy, high-tensile steel for all of the H-10 body sheets which contact the lading.

For the present the N&W is building a car which is designed to stand up under a growing coal traffic. Two of the early cars were tested at the Technical Center of the National Malleable & Steel Castings Co. in Cleveland. No major design changes have had to be made based on these tests and the cars are proving entirely satisfactory in service.

N&W Duplicated Capacity of Previous 70-Ton Cars

BUILT	H2a	H10
	1949-1956	1956-1957
Capacity level full, cu ft	2460	2460
Length over strikers, ft-in.	38-2	38-2
Length inside body, ft-in.	36-9¾	36-9¾
Height over end sheets, ft-in.	12-3	12-3
Height over side angles, ft-in.	11-0	11-0
Width, inside, ft-in.	9-6	9-10
Width over side angles, ft-in.	10-3¼	10-7¼
Weight, light, lb	52,700	52,600



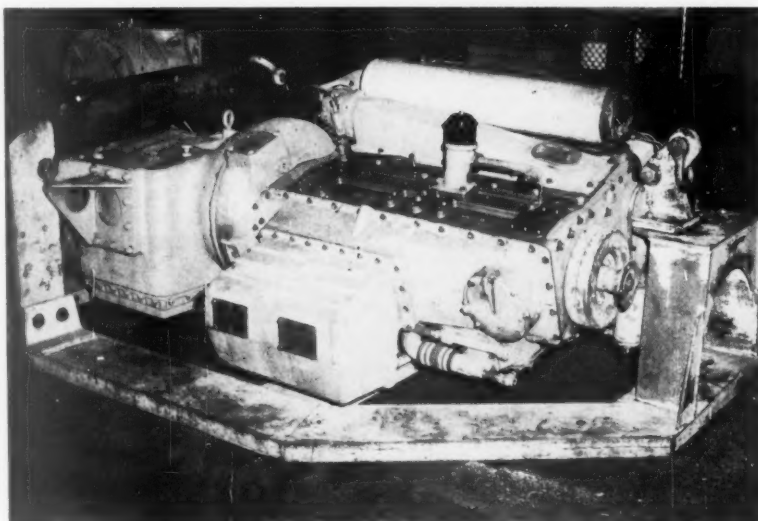
Over 600,000 car miles per month are operated with Budd RDC's on the B&M. Suburban service, local hauls, and long-distance runs are all assignments for these versatile cars. B&M uses from one to eight cars in a single consist.

Engine Overhauls for Largest RDC Fleet

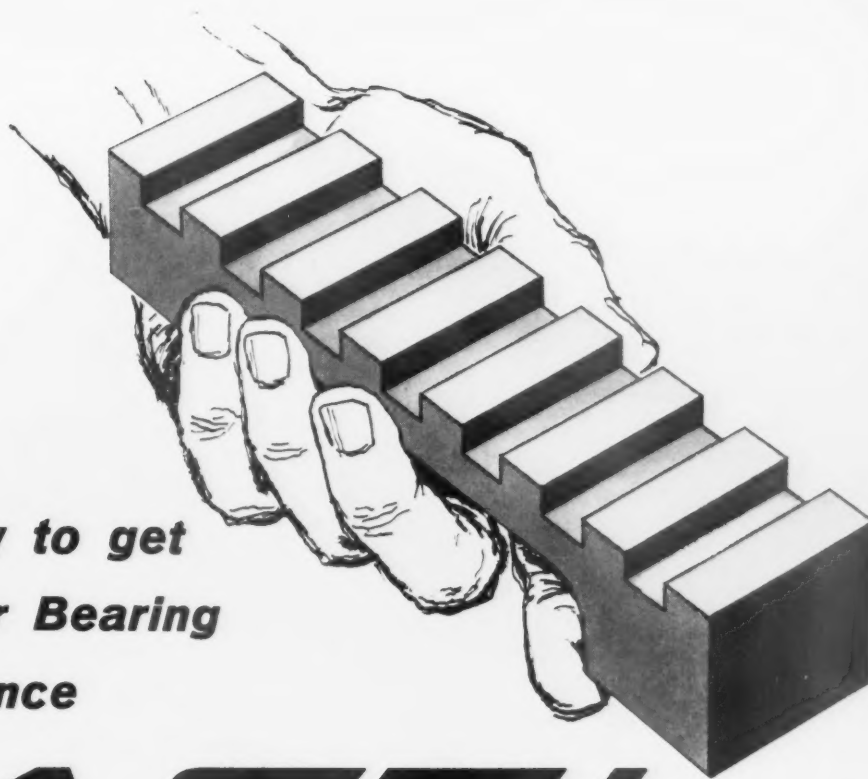
Repairs and rebuilding for the GM engines and transmissions of the world's largest RDC fleet are being handled at the Billerica shop of the Boston & Maine. The B&M is the undisputed leader in RDC ownership with nearly a third of all the rail diesel cars which Budd has ever built. B&M's 103 units totals more than twice the number owned by any other single railroad.

Billerica is located over 20 miles northwest of Boston and a section of this diesel back shop specializes on Budd engines. Most of the servicing and running repairs for this large fleet of rail diesel cars is handled in the engine house at Boston. This terminal also charges out the

Boston & Maine has tooled its diesel shop to repair the power plants for 103 cars.



Engine shipping and assembly stand developed by the B&M is used for transportation between the back shop and running repair terminals. Frame of stand is rugged, and the engine is mounted in it the same way it is suspended under the car body.



**Surest way to get
Better Bearing
Performance**

FAST!

**Railroads have accumulated
30,000 car-months of service
with R-S JOURNAL STOPS
— and have averaged
better than
6,000,000 car-miles
per set-out**

MAGNUS R-S Journal Stops, bolted to the inside of the box, on either side of the journal, positively prevent excessive axle displacement even under the severest road or switching impacts. All elements of the bearing assembly are kept *in place, all the time!* You maintain a constant hydrodynamic oil film that guarantees optimum journal bearing performance.

Magnus R-S Journal Stops are now installed on more than 2,600 cars which have accumulated more than

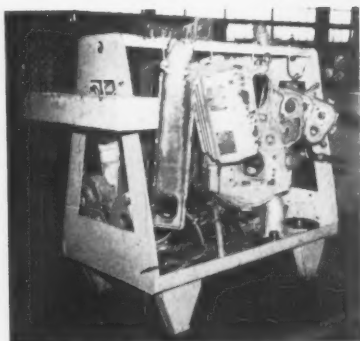
30,000 car months of service. In this time there have been only six road failures. That's equivalent to better than 6,000,000 car miles between set-outs. You can't beat that kind of performance with any other type of freight car bearing — or any other journal bearing device.

For full information on R-S Journal Stops, write to Magnus Metal Corporation, 111 Broadway, New York 6; or 80 E. Jackson Blvd., Chicago 4.

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Solid Bearings

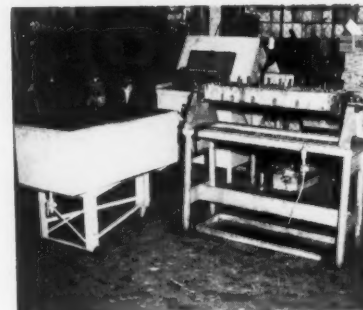
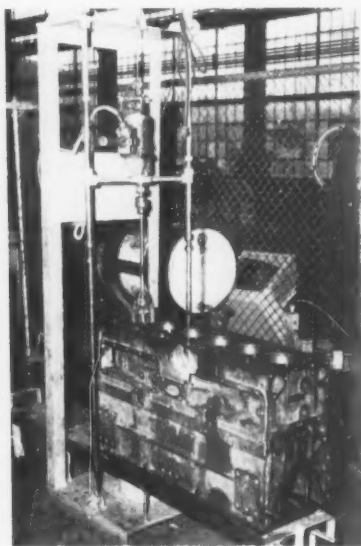
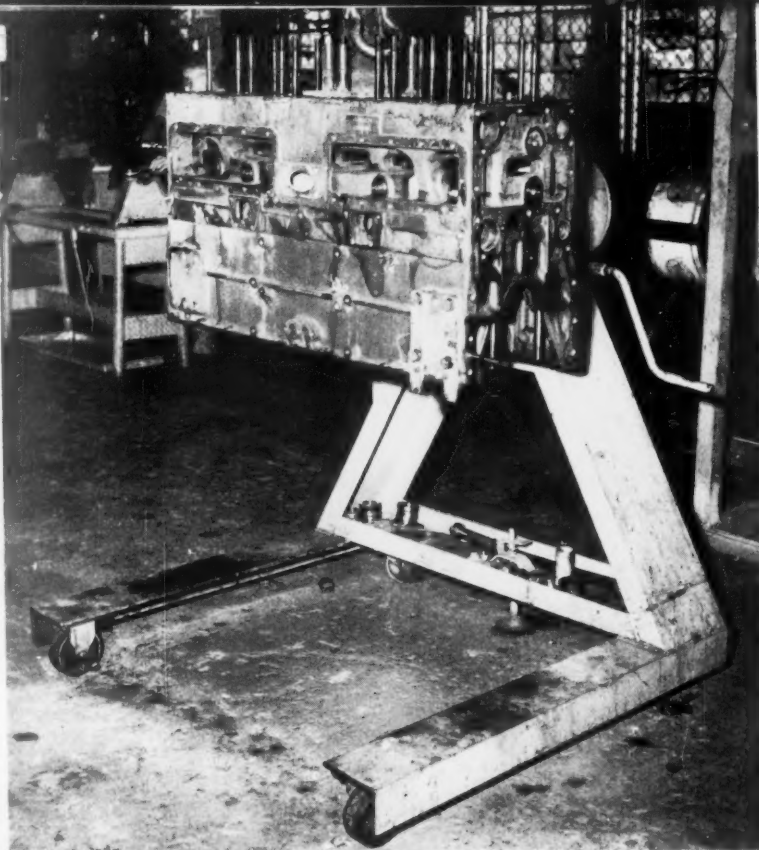
MAGNUS METAL CORPORATION *Subsidiary of* **NATIONAL LEAD COMPANY**





Rack for holding disassembled engine parts is moved to diesel shop cleaning tank and parts remain on it while being cleaned. B&M generally assembles the same group of parts when rebuilding an engine. After cleaning parts are inspected closely.

Detroit engine block has been placed on a crank-operated positioner for reassembly of an engine. Engines are torn down on the same stand. B&M has seven-compartment trays for segregating the bolts and other fasteners from different parts of the engine.



Honing stand (left) for diesel engine block has been arranged so that this operation need no longer be done by hand. The B&M performs some welding and brazing repairs on major components such as this; other times sends them out for such work. Engine parts (center) such as pistons and crankshafts are subject to Zyglow inspection before being returned to service. Most smaller and less expensive engine components are scrapped rather than being reclaimed for further use. On the stand (right) the engine cylinder head is completely assembled with its valves and other components prior to application to the block. Tank at the left is used to make water passage leakage tests after blanking plates have been applied to passages.

power plants and sends them to Billerica for necessary work. The B&M RDC fleet is composed of fifty-six RDC-1's, fourteen RDC-2's, three RDC-3's and thirty RDC-9's. These RDC-9's are single engine cars without engineman's controls and with windowless vestibule ends. The B&M is the only road to operate the RDC-9 type of car. This entire fleet requires 176 engines in actual service and 12 others maintained as spares.

Through the years the B&M has

been successful in keeping repair costs low. During 1956 the nine cars purchased in 1952-1953 were costing \$.210 per mile for repairs, the sixty-one 1955 cars averaged \$.102 per mile and thirty-three 1956 cars (mostly RDC-9's) were being repaired for \$.046. This meant that the entire fleet had an average repair cost figure of \$.11 per mile.

Power plant mileage between heavy repairs has varied from about 100,000 miles to over 200,000 miles, which design changes are ex-

pected to increase still more. Heavy power plant repairs were accomplished at an average cost of \$2,514.93 per engine last year.

The B&M has been installing and building equipment at Billerica shops which has been a big factor in keeping down the costs of engine overhauls and also has assured the satisfactory performance of these power plants when they are again installed under cars. A large number of jigs and racks have been built for specialized operations,



Big Load... Easy Lift

for Yellow Strand Braided Safety Slings

Here's why Yellow Strand Braided Safety Slings make it easier to lift big loads:

They're unusually flexible — can be installed and removed more easily . . . resist kinks and twisting. They're strong — are made by a special Broderick & Bascom braiding process with proved, dependable Yellow Strand Wire Rope.

They provide maximum safety — safeguard employees, loads and equipment.

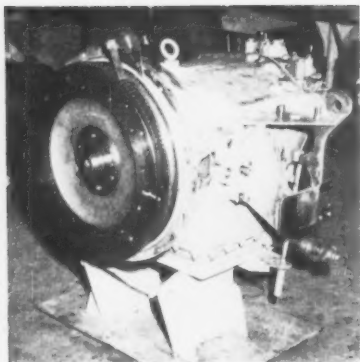
They're available for any load — for the routine lifts, unusual shape or size loads, extra heavy loads. Yellow Strand Slings can be specifically engineered for your individual needs.

Broderick & Bascom engineers will be glad to assist you with your sling problems.

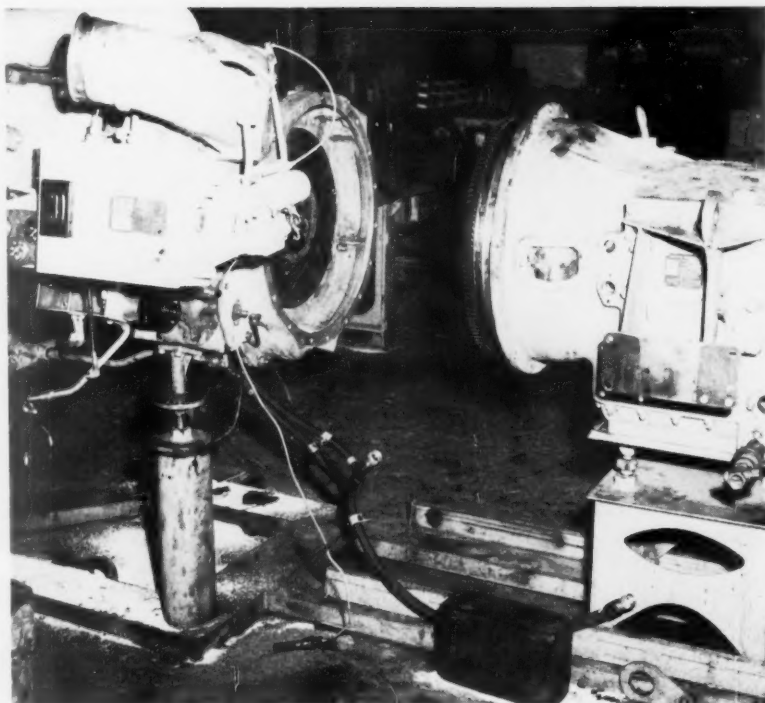
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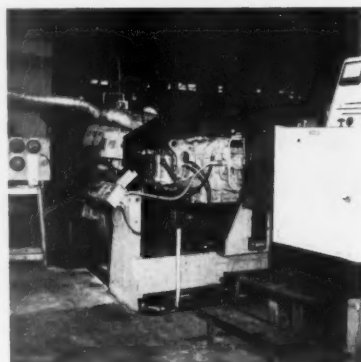
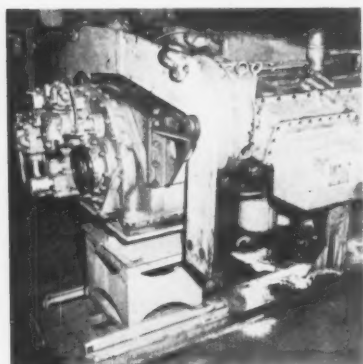
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4203 Union Blvd., St. Louis 15, Mo.



Transmission on assembly stand can be worked readily. B&M has recently acquired a Heli-arc welding outfit for repair of transmission housings and engine oil pans sometimes damaged when cars run over objects such as fallen rocks.



Stand (right) for removal and application of transmissions makes possible rapid alignment and simplifies assembly and disassembly procedures. Note (below) that the yoke from the shipping stand has already been applied to assist in moving the complete engine to the dynamometer.



Satisfactory engine operation when power plant is placed under a car is assured because the engine has already been run in on this test stand. Clayton dynamometer has Spicer shafts out of both ends, but only capacity to test one engine at a time. This arrangement permits "setting up" a second engine so that the testing can be continuous. Flexible, water and exhaust connections are conveniently located. A standard RDC air cleaner is mounted on a stand and can be wheeled up to the test block. From the portable gauge board the following readings are taken: water temperature in, water temperature out, transmission temperature, exhaust temperature, engine oil pressure, air box pressure, crankcase pressure, and engine speed.

many designed by shop superintendent E. C. Cone and by RDC foreman J. E. Manne. The railroad has installed a Clayton dynamometer which makes it possible to completely load test the engine and transmission prior to shipment. This load tester is capable of absorbing 300 hp. The diesel governor room at the shop also handles Budd engine governors. Some components are sent out for reclamation and many others are automatically renewed when the engine is torn down. At times the shop has had to turn out as many as 20 light and heavy power plant overhauls in a week.

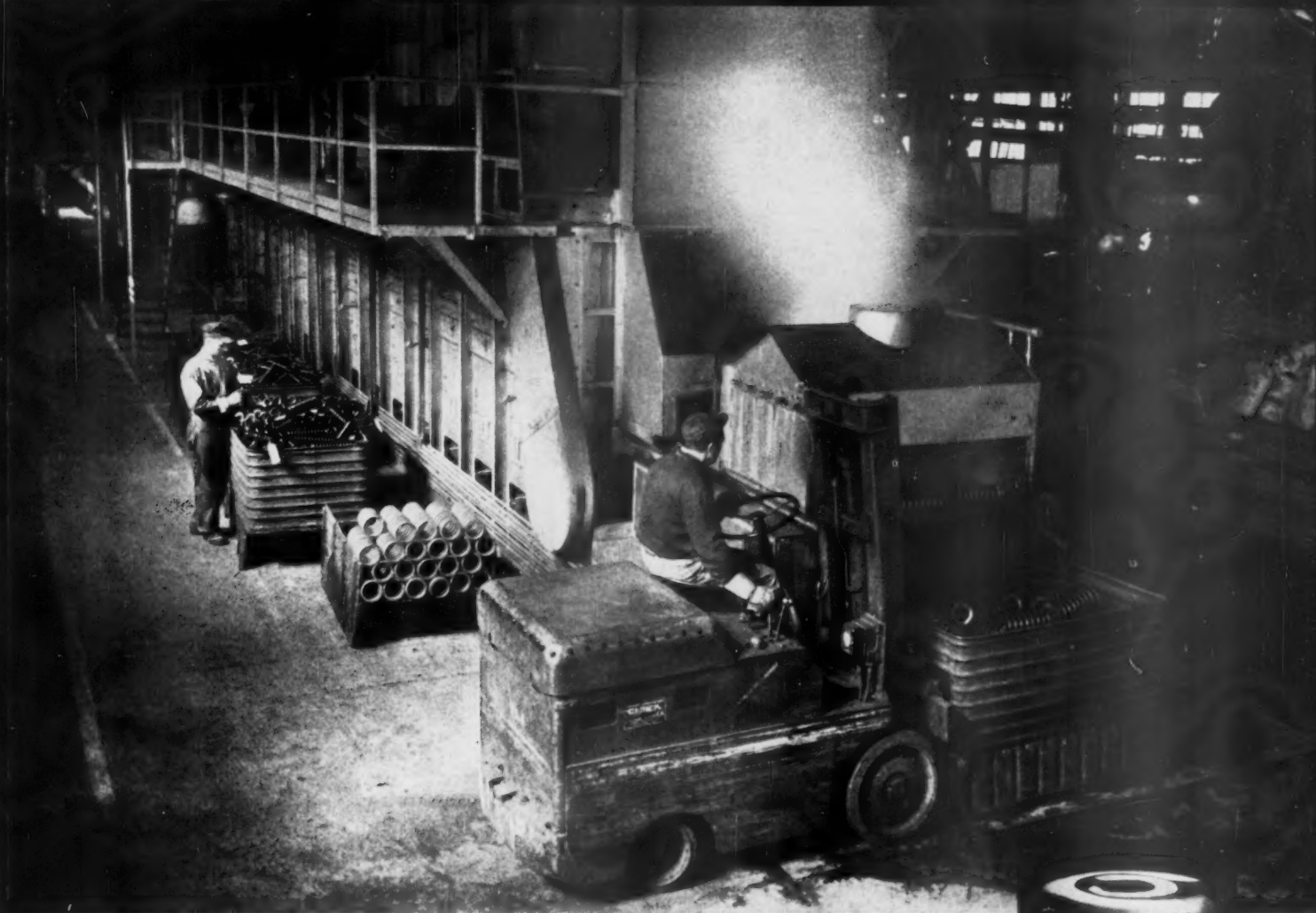
Today the RDC's are producing over 90 per cent of the B&M's pas-

senger train miles. Their ability to do this is, in part, a reflection of the confidence which the operating department has in their reliability. Scheduling for high utilization must depend on a minimum of road fail-

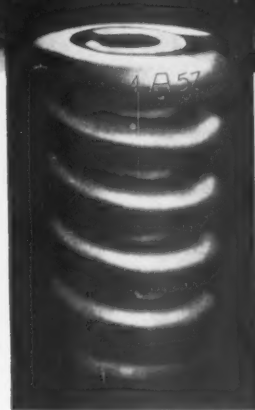
ures and maximum availability. Running maintenance and servicing by various B&M terminals, along with the work done by Billerica shop is a big factor in these operating results.

MAJOR ITEMS OF EQUIPMENT AT B&M's BILLERICA RDC ENGINE SHOP

- | | |
|---|---|
| 4 Engine block positioners for assembly and disassembly | 2 Engine assembly stands |
| 2 Cylinder head assembly stands | 1 Boring bar |
| 1 Water tank for cylinder head testing | 1 Honing fixture |
| 1 Deep freeze for valve inserts and transmission parts | 1 Dynamometer |
| 1 Hot oil tank for expanding parts | 3 Engine test stands |
| 1 Engine stripping stand | 10 Rack-skids for holding disassembled engine parts |



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ALCO FREIGHT CAR SPRING has date of manufacture stamped on coil. If it breaks within a period of ten years from that date, a new spring will be furnished free of charge by ALCO.

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(Standard AAR Designs)

- | | |
|---------------------|-------------|
| 1. 2 1/2-in. travel | 4. 1915-D |
| 2. 3 1/8-in. travel | 5. 1936-D-2 |
| 3. 3 1/4-in. travel | |

*Except springs for brine refrigerator cars.



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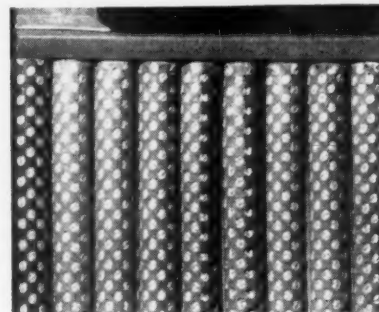
EXIDE DEVELOPS NEW, IMPROVED, MORE

Photo courtesy Reading Railroad



New MGD Exide-Ironclad Battery for diesel locomotives. Designed to conform with recommended practices of Association of American Railroads.

**ADVANCED TUBULAR CONSTRUCTION—
DEVELOPED OUT OF RESEARCH
STARTED 15 YEARS AGO**



Armored porous tubing. Provides resistance to shedding and effects of vibration, improved flexibility, and maximum retention of active material. Thousands of tiny openings mean . . .

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New MGD Exide-Ironclad Battery design unlocks more power from battery space—gives you increased savings on investment and operations

Now Exide-Ironclad diesel locomotive batteries are thrifter than they ever were. Always famous for long life and high performance, now they offer improvements that mean even higher capacity per dollar.

Exide has achieved these new benefits for diesel locomotive users by taking full advantage of the extremely high permeability of the armored porous tubing and its improved active material retention characteristics. This highly permeable tubing, made of braided glass fibers within a perforated polyvinyl chloride armor, acts like a highly efficient filter, preventing practically any loss or shedding of active material. Yet the high porosity enhances contact between electrolyte and active material—significantly improving battery performance.

How you benefit

The new MGD battery packs more power per plate than other diesel locomotive batteries. It gives you a 50% increase in amperes discharged at diesel engine cranking rates even over previous model Exide-Ironclad Batteries.

The MGD is available in two sizes: 280 and 420 ampere-hours at the 8-hour discharge rate. In both, concentration of battery power reduces the space required. The MGD-19 (420 ah capacity) battery normally used in large road locomotives is now available within the dimensions of batteries furnished in smaller switching locomotives without sacrifice in cranking,

standby performance and life. This means new versatility and the possibility of reducing the number of sizes of batteries needed.

Same Exide-Ironclad quality features

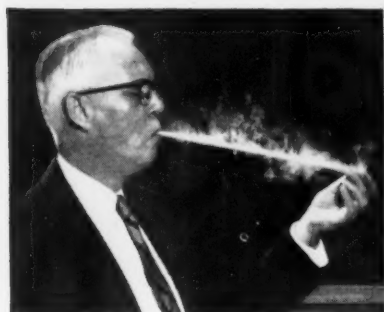
With all these improvements and new battery economies, you still get the quality features that contribute so much to the proven performance of Exide-Ironclad Batteries: heavy copper inserts in terminal posts and cell connectors to insure high sustained voltage during cranking; large electrolyte reservoir above plates to reduce watering requirements; ample sediment space in bottom of jar for long life; rugged molded rubber container built to withstand locomotive operation and provide for reduced maintenance.

Discover how much you can save

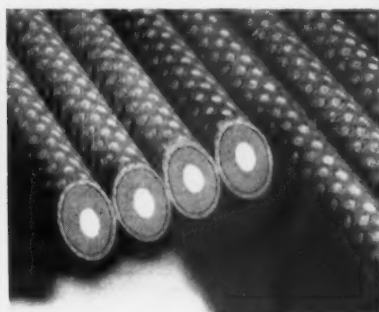
Learn how much you can benefit from the advantages this battery offers. Call your nearby Exide representative. Or write for complete information. Dept. MG, Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

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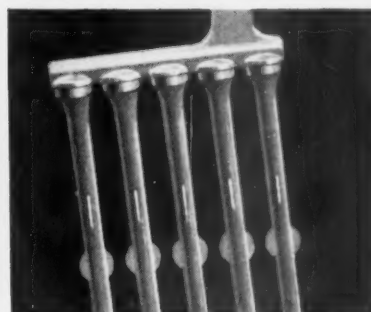
THE ELECTRIC STORAGE BATTERY COMPANY



Greater porosity. Highly permeable tubes ease current flow, reduce internal resistance, improve access of electrolyte for superior performance under heavy loads. Each plate delivers more power. Tubes hold . . .

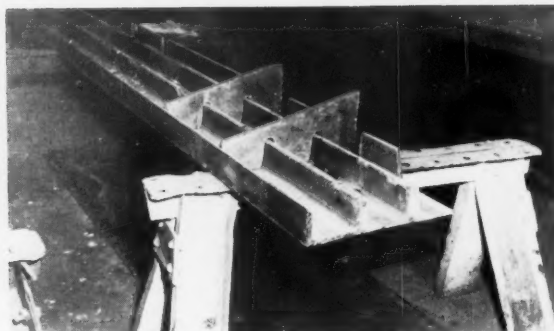
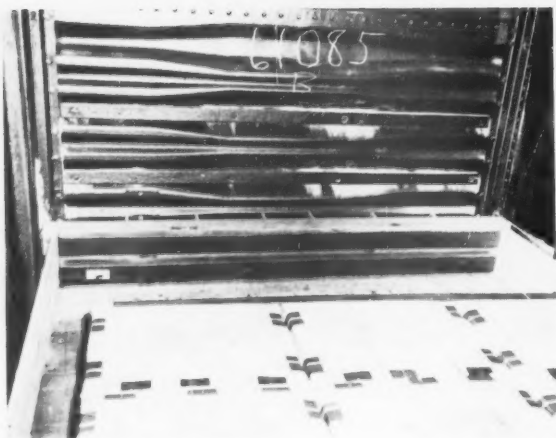


More active material. Chief source of battery power. Larger inside diameter of tubes means every positive plate contains more active material per cubic inch of plate. You get all this . . .



Plus Silvium,* Exide's patented grid alloy—proved more corrosion resistant than any other grid alloy. Tests prove conclusively that Silvium prolongs battery life.

*U.S. Patent



Floating unit palletized load does float! Rubber bumpers (left) tied in with bulkheads and side lining protect edges of tin plate from crushing. Gussets (above) are formed and welded to channels to make a one-piece structure.

Rubber Bumpers Absorb Shock In . . .

EJ&E's Newly Developed Box Cars for Tin Plate Traffic

Some 500 50-ton box cars, built in 1948, are now going through the East Joliet shops of the EJ&E under a planned heavy repair program. Two hundred fifty of these cars will be equipped to handle sheared and coiled palletized tin plate. The railroad serves as origin line carrier to three major producers and shippers of this commodity. To date, more than 200 cars are in this service, assigned to the Chicago switching district and Milwaukee area.

The tin-plate car program was started in January of this year, with an output now of five per day. The unique features of the cars consist of three 6-in. channels welded to form an 18-in. high by 9-ft. 7½-in. bulkhead in each end. Each bulkhead is braced by six ¾-in. by 7½-in. by 17¼-in. gussets, welded to it and attached to the end sill. At the end of each bulkhead is a side sill, side post and bulkhead channel connection gusset, ¾ in. by 17 in. by 32½ in., providing a firm support to the partial lining brace.

Attached to each bulkhead are two 3½-in. by 4½-in. by 9-ft Goodyear rubber bumpers, the lower one located 2¾-in. above the floor line, with 2½-in. space between it and the upper bumper. Each bumper has a 1-in. centrally cored hole running the entire length and is drilled at four places for

½-in. by 2½-in. bolts, the heads of which bear against a piece of 1-in. half-round placed in the cored hole. The bulkheads are located 11 in. from the ends of car, providing a cushion for the load without damage to the car end, and also a surface to load against.

Altered After Tests

In the repair operation, the flooring and siding was removed from the cars prior to incorporating several special features required because of yard and road tests. The tests were based on various combinations of palletized packaged and varying sizes and weights of palletized coiled tin plate. General Steel Castings one-piece combination bolster, center plate and draft sill end castings are applied for greater strength and dissipation of shock. Tongue and groove oak flooring, 2¼ in. thick is used, this being ½ in. thicker than previous flooring. It was necessary to weld a ½-in. by 1-in. steel strip in the doorways to compensate for the increased height. The floor plates, which cover a 10 ft length at the doorways, were reapplied to facilitate use of heavier loading equipment.

Three types of rubber draft gear are used, together with new

yokes and straight shank couplers. Tongue-and-groove yellow pine side lining extends 18 in. above floor, butting against the bulkheads and edges of rubber bumpers, providing protection to side of unit loads. To eliminate condensation, the interior of car is painted with Milar smooth cement.

These cars are a result of several months study of tin plate load behavior, built to encourage shippers and users of tin plate to continue to specify railroad handling. J. Losick, freight service engineer of the EJ&E, was assigned to coordinate the efforts of shippers, carriers and users of tin plate to develop adequate equipment and satisfactory bracing methods. Today, tin plate is shipped in palletized fibre board packages, wrapped on the inside with moisture resistant paper. The packages are combined into a floating unit load. By use of a rubber bumper on each end of car, plus mechanical brakemen plates, burst packages and damage to ends of the tin plates has been greatly reduced, and the cost of bracing and blocking cut 60 per cent from the previous standard method.

The performance of the cars is said to be highly satisfactory, based on random observation of load behavior in many areas and destination inspection reports.

New York Central's 375 Alco diesels are equipped with Ni-Resist exhaust manifolds. (Upper right) Part of manifold used on NYC locomotives to eliminate costly, time-consuming "between-overhaul" maintenance on diesels.



Ni-Resist exhaust manifolds save work! Long life cuts "between-overhaul" maintenance

The New York Central System obtains 24 to 30 months' life and more from diesel engine exhaust manifolds of Ni-Resist* austenitic iron, alloyed with nickel and chromium.

This service matches the railroad's regular overhaul period.

New York Central thus eliminates between-overhaul maintenance of exhaust manifolds on some 375 Alco passenger, freight and road switch locomotives.

The road makes a big cut in maintenance labor and expense. But that isn't the whole story...

Ni-Resist manifolds minimize burnouts

Burnouts that disrupt schedules and cause expensive delays are reduced, because Ni-Resist manifolds retain ample strength at temperatures in the range of 1200° F. They give satisfactory service on turbo-charged and supercharged diesel engines because...

Ni-Resist manifolds are heat resistant

They resist oxidation and scaling. The scale that does form is thin, tight and adherent. No "flake-off" to damage turbine blades. Use of Ni-Resist austenitic cast iron prevents warping and growth as well as cracking. The expansion rate of Type 3 Ni-Resist iron conforms with that of other parts

in the engine system. So joints stay tight.

In certain other types of engines Type 2B Ni-Resist parts may be used for a different level of expansivity. Ni-Resist castings can save you money in other diesel engine applications, too. In cylinder liners, valve guides, and ring groove inserts for aluminum pistons. If you are having trouble with such parts, fill in the coupon... mail it now.

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The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

Gentlemen: We're having trouble with

- ☐ exhaust manifolds ☐ cylinder liners
☐ piston inserts ☐ valve guides
due to heat ☐ corrosion ☐ wear ☐

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Title _____

Company _____

Address _____

City _____ State _____

☐ Please send booklet, "Diesel Dan's Manual".



THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street
New York 5, N. Y.

Ideas for the Diesel Repair Man...

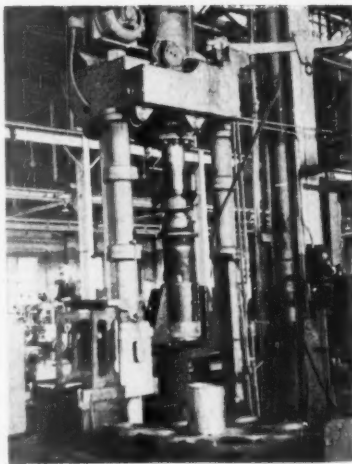
Inspecting F-M Cylinder Water Jackets

Fairbanks-Morse cylinder liners and water jackets are disassembled and completely inspected by both the Pennsylvania and Milwaukee.

Driving-box crown brass press on Milwaukee has been adapted with two fixtures for job. One permits the liner to be pressed out of the jacket; the other presses the jacket on the liner a little beyond its normal position to permit the installation of the locking ring.

After liner and jacket are separated, they are wire brushed and examined with Magnaglo. A shop-built induction heater with automatic 6-min timer heats the jacket to 275-deg and it is installed over new seals. Inspection date is then stencilled on it. Complete assembly operation takes 8 min.

Pennsy uses its induction heater for the same purposes. Jackets are



Press at Milwaukee, Wis., shop.

heated for removal. Liners and the jackets are then cleaned and checked. Jacket is then expanded



Pennsy built its own at Altoona, Pa.

and forced into position with the specially-built air press. After cool-
(Continued on page 70)

WESTERN LOCOMOTIVE and CAR JACK

lifts capacity
loads easier



WESTERN has made the first major change in Locomotive and Car Journal Jacks by adding Timken tapered thrust roller bearings, replacing ball bearings. This major improvement means reduced friction, greater speed, easier operation and less maintenance . . . available in 25, 35 and 50 ton capacities. Aluminum or malleable steel housings available in 25 and 35 ton models.

8018

Write for Bulletin No. 1957



WESTERN

RAILROAD
SUPPLY
COMPANY

Division of Western Industries, Inc.

2400-2434 S. Ashland Ave., Chicago 8, Ill.

How Metallizing saves money in railroad shops

"Cold" metal build-up helps beat skyrocketing replacement costs—speeds maintenance jobs

Typical Railroad Metallizing Applications

Engine crankshafts, mains, throws, fits • Engine cylinders, liners, liner flutes • Water jackets, camshaft bearings • Generator, traction motor, other armature shaft bearing fits • Compressor crankshafts • Traction motor end housings • Pump rods and shafts • Eroded or corroded portions of engine blocks • Car lighting generator pulleys • Dents and scratches in car bodies

—practically any worn part repaired at only 15 to 20% replacement cost—get equipment back in service in hours, instead of days or weeks.

Some of the 28 major railroads using Metallizing:

A.T. & S.F.	Missouri Pacific	Baltimore & Ohio
New York Central	Northern Pacific	Canadian National
Atlantic Coast Line	Pennsylvania	Chesapeake & Ohio

SPECIAL RAILROAD BULLETIN AVAILABLE—Illustrates and describes a number of these time-saving, money-saving metallizing applications. Data supplied by railroads using metallizing; photographs taken in user shops. Write for copy.



Metallizing Engineering Co., Inc.

1117 Prospect Ave., Westbury, L. I., New York • cable: METCO
In Great Britain: METALLIZING EQUIPMENT COMPANY, LTD. • Chobham near Woking, England
Telephone: EDGEWOOD 4-1300



**Check list for a customer:
to measure the quality
in a supplier's products**

You measure the quality of a supplier's product two ways...by the way his product is made—and by the way it serves you on the job.

Count the years of service you have already received—the additional years you know your cars will deliver. Walk down your rip-tracks, check your bad order cars. Then note the design and performance of the car components that have served your operation best.

Performance that cuts your costs by lengthening the life of your cars, by providing dependability and efficiency, is performance that's designed and built in by a responsible supplier.

This is the way to judge a supplier's product. Next month we'll show how a responsible supplier continually strives to improve his product design, thereby constantly offering improved performance and new product-uses to you.

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY

General Office: 4527 Columbia Ave., Hammond, Ind. • New York • Chicago • St. Paul • San Francisco





Inspection and running maintenance are performed on the upper level, truck work below.

'Rapid' Shop Has Everything

DESIGNED from the ground up, to include a maximum of automation, the "Rapid" shop in Cleveland, Ohio, includes many items of interest to all operators and maintainers of electrical car equipment.

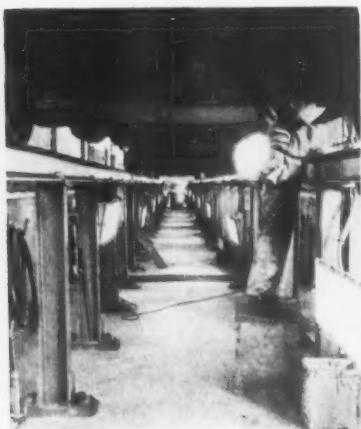
The shop includes an upper level in which there are three shop tracks, a lower or street level for truck work, and a balcony in the upper

Cleveland Rapid Transit shop is highly mechanized to meet all needs of inspection and running maintenance

level where pantographs are removed, overhauled and replaced.

The equipment which is maintained in the shop at present in-

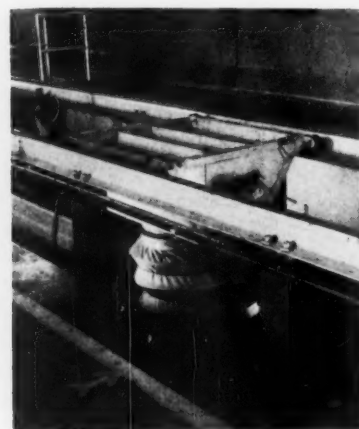
cludes 88 cars, 70 of which are permanently coupled to make 35, two-car trains. The other 18 cars may be operated as single units. Each car



Inner section of the No. 1 pit where running inspection is performed.



Outer section of the No. 1 pit showing controller inspection.



Traction motor location shows exhaust head and duct. Arrow, bottom, is used for spotting.



For Full Power when it's needed most,
specify **gould** batteries...



America's Finest!
GOULD KATHANODE
BATTERIES
for Air Conditioning
and Car Lighting

Here's why: You know that an overload can cause an unusual drain on your batteries. At such times your batteries must be in "good health" or they may not survive the strain. Keeping batteries in "good health" is not difficult, all it takes are good routine checking procedures which give you a day-by-day record of a battery's condition. By consulting these records frequently you can always be sure of full power when it's needed.

An important part of the Gould service is to help you establish such a sound preventive maintenance program, and teach your battery maintenance personnel the importance of following recommended procedures. This is another reason why it pays you to specify Gould. Want more reasons? Write for booklet "... so you're going to buy an industrial battery." Gould-National Batteries, Inc., Trenton 7, N. J.

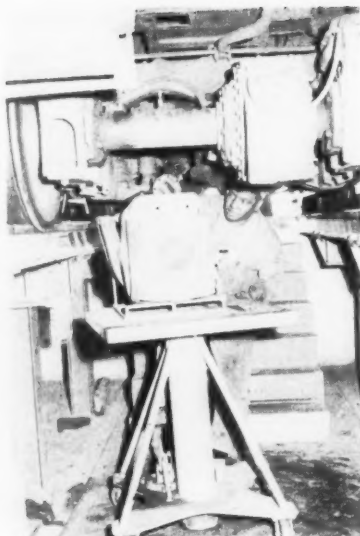
Always Use Gould-National Automobile and Truck Batteries
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More Power to you from Gould

'RAPID' SHOP . . .



A motor is lowered into the No. 2 pit on to a portable hydraulic lifting table.



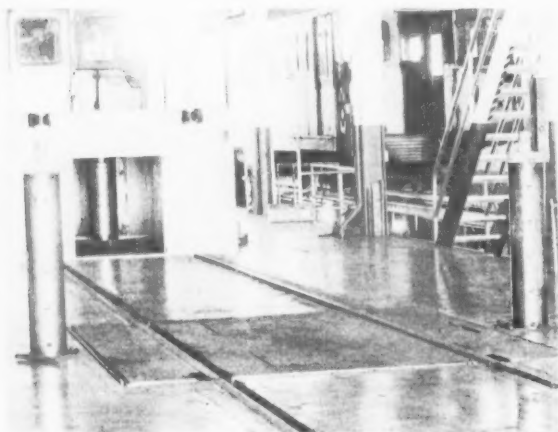
The portable table is rolled under a car preparatory to lifting the motor into place.

is equipped with four, 55-hp, 300-volt motors, permanently connected, two in series. There is no transition and the cars are operated in multiple-unit up to eight car trains.

The shop is 242 ft long by 85 ft wide, and there are two full-length through tracks on the upper level. The first track has an inspection pit which extends the full length of the shop.

There is a half-length inspection track on the second track. On the other half of the second track, there are four hydraulic hoists spaced to match the truck positions of a two-car train. These hoists can lift the two-car train complete.

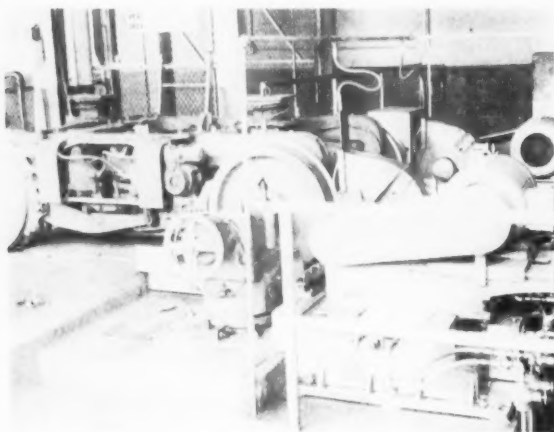
Then if the trucks are to be removed, four hydraulic jacks may be raised to jacking pads on the sides of each car. With the car supported on these eight jacks, dowels are



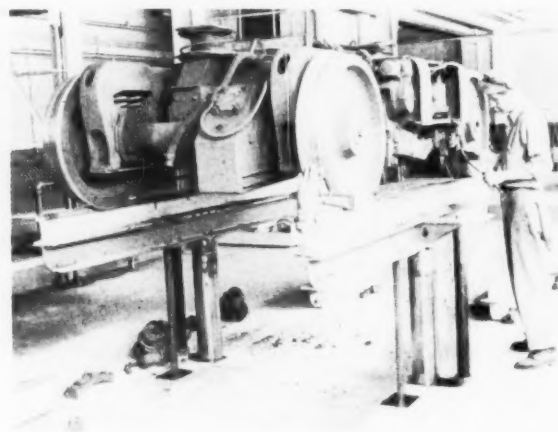
At rear, left, is one of the four hydraulic hoists on track No. 2 used to lift a single or 2 car unit. At the front are two of the 8 hydraulic jacks used to support the car bodies when the trucks are removed.



The truck hoists lower trucks to the lower floor where a transfer table and turntable are used to move them to the wheel lathe or truck repair stand.



Wheel grinder on which wheels are ground in the trucks.



Hydraulic jacks lift the trucks to a convenient working height on lower floor.



On express lines... and at whistle stops...



**The performance and the brand are
the same around the world**

**Other Outstanding
Shell Industrial Lubricants**

Shell Tellus Oil—for closed hydraulic systems

Shell Alvania Grease—multi-purpose industrial lubricant

Shell Turbo Oil—for utility, industrial & marine turbines

Shell Dromus Oils—cutting oils for high-production metalworking

Shell Rimula Oil—for heavy-duty diesel engines

SHELL TALONA R Oil 40 offers two outstanding reasons for its acceptance as a top-rated diesel-electric locomotive lubricant. It provides superior anti-wear protection and maintains engine performance.

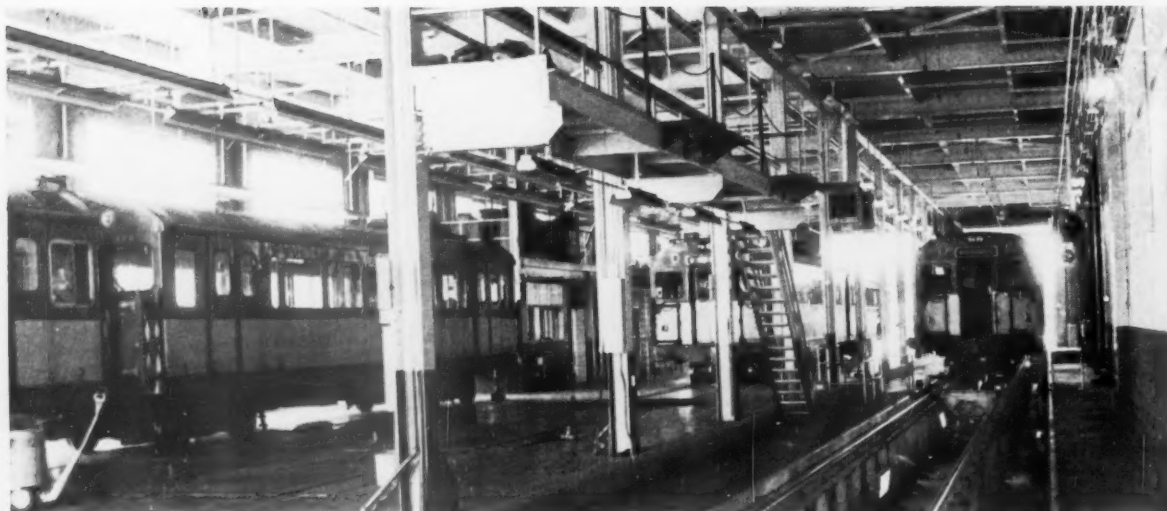
Greatly reduced wear on pistons, rings and cylinder liners is assured because of the selected combination of additives used in Talona® R Oil 40. It has high oxidation stability, com-

bined with resistance toward corrosion and sludge formation. It prevents ring fouling and provides excellent detergent-dispersant action.

Today—railroad operators abroad can enjoy the same Talona R Oil 40 the domestic carriers rely upon. For complete information, write to Shell Oil Company, 50 West 50th St., New York 20, N.Y., or 100 Bush Street, San Francisco 6, Calif.

SHELL TALONA R OIL 40





A monorail and chain hoist are used on the pantograph balcony for removing and applying pantographs.

pushed through holes in the jack pistons, so that pressure may be released from the jacks and the car supported on the dowels.

It is then possible to disconnect the trucks and lower them on the hydraulic hoists to the lower floor of the shop where the truck and wheel work is performed. A single truck may be removed by the same procedure.

The third track is also half length and is a floor-level track. The remaining section of the shop in line with the third track is used for office, tool room, oil room, etc.

Running inspection, performed on the first position of the first track, consists of removing motor and con-

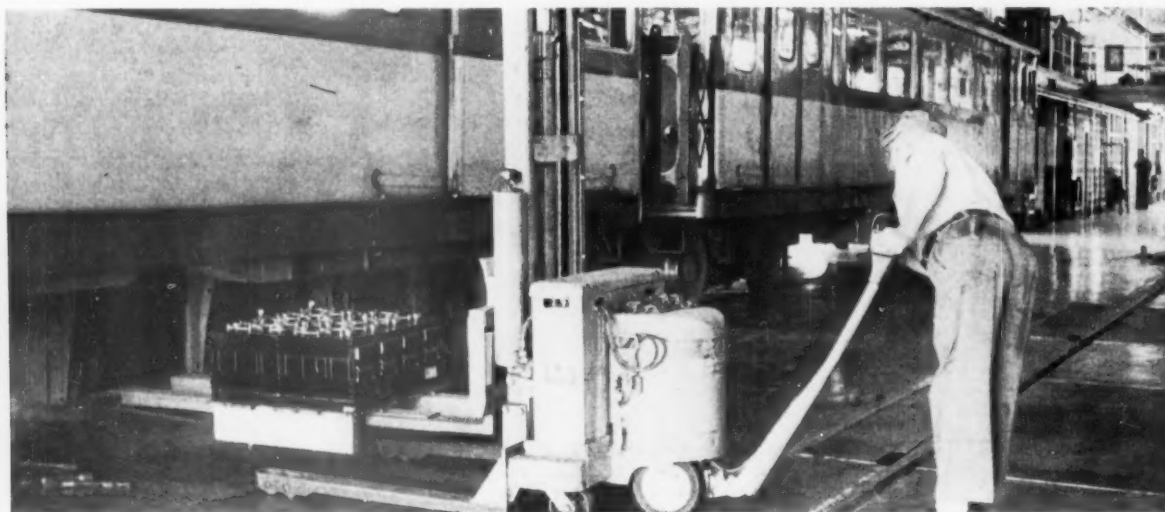
trol covers, blowing them out with compressed air. Immediately under each truck and control compartment is an exhaust intake through which air is drawn by an exhaust fan driven by a 10-hp motor. Dirt released by an air hose jet is drawn into the duct, and exhausted through a water curtain in a room on the lower floor. A movable collector, shown in one of the illustrations, is used to direct the dust to the intake duct. On the second position of the first track, inspection, making any necessary repairs, and lubrication work are done. All lubricants are piped to lubricating positions from the oil rooms. This position also has eight hydraulic jacks to lift the car bodies

from the center plates for lubrication.

The half-length pit under the second track is used for miscellaneous work such as removing and replacing individual motors, compressors, couplers, etc.

Pantographs are inspected and lubricated from an inspection platform, located between the No. 1 and No. 2 tracks. Lights on the platform indicate a dead trolley. No lights indicate a live trolley and each inspector has his own padlock to lock the 600-volt trolley switch open. Pantographs have carbon contact surfaces.

All lighting in the shop is fluorescent.



An electric fork-lift truck is used to place the nickel-iron batteries into the battery boxes.

made stronger to last longer



SHOT PEENING creates a thin, cold worked layer that, in effect, causes the spring to operate at lower stress. Shot peening also erases tiny surface imperfections which could cause stress concentration points leading to spring failure.

Crucible *fatigue-resistant* springs

help keep cars off the repair tracks

Three major railroads report: 90% of all car springs fail due to permanent set — only 10% due to other causes. You can reduce the frequency of failures by using Crucible's single heat treated *fatigue-resistant* springs. They're *made stronger to last longer*, yet cost no more than conventional springs.

Crucible *fatigue-resistant* springs are stronger because they're single heat treated and shot peened. These processes provide better

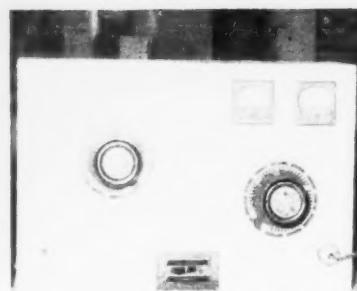
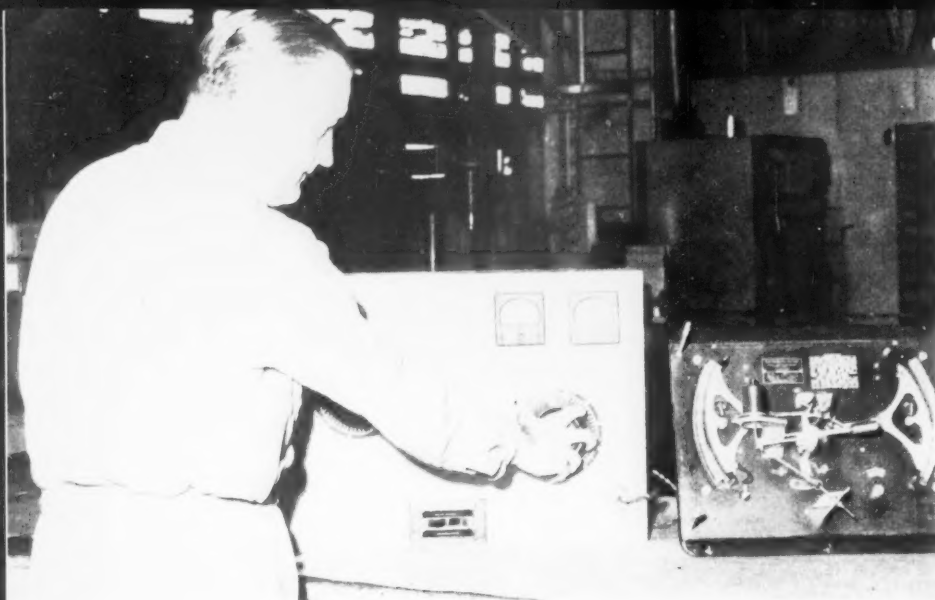
hardenability, higher elastic limits and greater resistance to working stresses.

Help keep cars off the repair tracks and reduce "bad-order" car expenses by using Crucible *fatigue-resistant* springs. They're your best guarantee of long, low-cost spring service. For further details, write for folder: *Spring Division, Crucible Steel Company of America, McCandless Avenue, Pittsburgh 1, Pa.*

CRUCIBLE

spring division

Crucible Steel Company of America



Voltage regulator (above) tester has dial at the left controlling the 50-ohm rheostat. The one at the right, the 8-ohm rheostat.

Operator (left), is using the 10-volt meter to run the regulator through its full range of action.

Tester Assures Voltage Regulator Performance

When auxiliary generator voltage regulators are returned to service after cleaning and overhaul at the Baltimore and Ohio Glenwood shops in Pittsburgh, Pa., their satisfactory performance is assured by a small portable test cabinet. It contains a 50-ohm rheostat; an 8-ohm rheostat; a 100-volt, full-scale, voltmeter; a 10-volt voltmeter; a double-throw, double-pole switch; input and output terminals and a single pole switch in the power supply circuit, all arranged as shown in the diagram.

Power from a small d-c generator is supplied to the input terminals at 75 volts.

The voltage regulator under test is connected to the output terminals.

To test a regulator for proper performance, the 50-ohm rheostat is first adjusted to produce a reading of 75 volts on the voltmeter with a 100-volt scale. Then the two rheostats are adjusted so that one voltmeter reads 65 volts while the other reads 10 volts. The test is then made by running the voltage on the regulator from 65 to 75, the 10-volt meter acting as a vernier for accurate measurement of this variation of voltage.

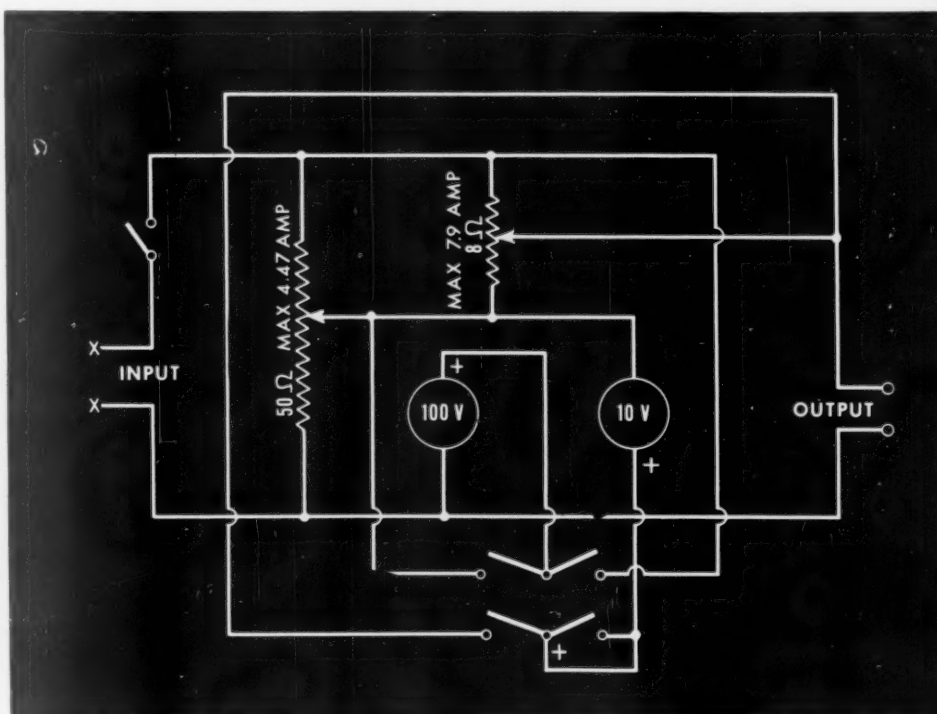
If the regular is functioning properly, the torque motor should move from one extreme position to the other while the voltage is varied over this 10-volt range. The action

of the regulator is observed, and if it does not move smoothly from one end to the other, it is rechecked for trouble with the torque motor, for trouble with the mechanical linkage, for binding, for improper spring tension or for dirt in moving parts. Since this method of testing has

been in service, it has practically eliminated faulty operation of voltage regulators after they are replaced on the locomotives.

The device was developed and constructed by John L. Kliment, electrician, Glenwood Shops, Baltimore and Ohio.

Wiring diagram for the voltage regulator tester.



Bar-burned traction motors a problem?

Call your **N**ATIONAL brush man...



Here's how he helped one road slash reconditioning costs!



MURPH VARNEY

At least 70 traction motors a year — laid up because of premature commutator bar burning. That was the problem "National" Carbon Brush Man Murph Varney found on a leading mid-west road. Amazingly, the road felt that resulting down time, parts and labor costs were the unavoidable price of high speed passenger operation.

Murph proved differently by analyzing this road's problem and recommending the right "National" car-

bon brush to alleviate bar burning. Result: premature removal of traction motors fell from 70 to 5 a year. Murph Varney and his fellow "National" Carbon Brush Men have been solving railroad brush problems for years. Their experience and training — backed by "National" long term brush development — make them the logical consultants on any railroad brush application. Call them today or write National Carbon Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

The terms "National", "N" and Shield Device, and "Union Carbide" are registered trade-marks of Union Carbide Corporation
NATIONAL CARBON COMPANY • Division of Union Carbide Corporation • 30 East 42nd Street, New York 17, N. Y.

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The Diesel That Moved With the Throttle in Idle Position

By Gordon Taylor



NO WELL BEHAVED locomotive should start moving when the throttle is in the *Idle* position, with engine idling and both the shunt and battery fields de-energized on the main generator. But that is what happened on a certain railroad when the hostler moved the reverser handle on a GP-7 unit to forward position, with the throttle in *Idle*. To stop movement he quickly moved the reverser handle to neutral, set the brake, and called one of the maintainers.

The maintainer quickly discovered that both starting contactors had stuck closed. He moved the reverser forward and had the same experience as the hostler. He also noted that the series power contactors had picked up, but shunt and battery field contactors were not energized.

The reverser handle was quickly returned to neutral position. The maintainer pried the starting contactors open with a stick of wood, shut the engine down and cleaned up the starter contacts. He then restarted the engine and the starting contactors dropped open in the proper manner. The locomotive then resumed normal operating behavior. That is, it would not start moving until the throttle was placed in *run* position.

The maintainer had done a good

job, but he was puzzled. He wondered if the uncalled for movement of locomotive was caused by current supplied from the battery and the auxiliary generator, or if in some manner, the main generator had become excited to a point where it was generating a current to move the locomotive.

Since the generator had been operating at idling speed with the shunt and battery fields de-energized, the maintainer wanted to clear up the question. He referred the question to "Doc" Watts, the electrical foreman at the system diesel house. Watts, glad to assist some one wanting to learn wrote the maintainer as follows.

"The trouble you reported could only happen on units wired in a certain way. For example, it would not happen on a GP-9 unit which has a little different wiring plan than is used on your GP-7 unit. Before we go into the explanation of what source of current caused the locomotive to move, let us consider the purpose and use of the a-b interlocks on the starting contactors. When the starting contactors are closed, their interlocks will be in an open position. These interlocks can be wired in the control circuit in different ways which we will list as Case 1 and Case 2.

Case 1. This is your GP-7 unit. The a-b interlocks of the starting contactor are wired into the control circuit so they interrupt the flow of current from the battery to the operating coil of the shunt field contactor, when the starting contactors are closed or sticking closed. When the shunt field contactor is not energized, its a-b interlocks will not close to energize the BF (battery field) contactor. Consequently, both the shunt and battery fields will be de-energized when starting contactors are stuck closed.

Case 2. Wiring on GP-9 units. The a-b interlocks of the starting contactors are wired into the control circuits in a tap from the reverser wires FO and RE, between the g-h controls of the isolation switch and the control circuits that operate the series and parallel power contactors. In this position, the open a-b interlocks of the starting contactors will prevent the closing of the series contactors. This also serves to keep the shunt and battery fields de-energized, since the shunt field contactor is held open by interlocks on the S13 and S24 contactors. With the shunt field contactor de-energized, the BF battery field contactor cannot close since, it depends on the a-b interlocks of the shunt field contactor being closed. Consequently this



SM-O-O-THER CAR-GO... PROTECTS VALUABLE CARGO

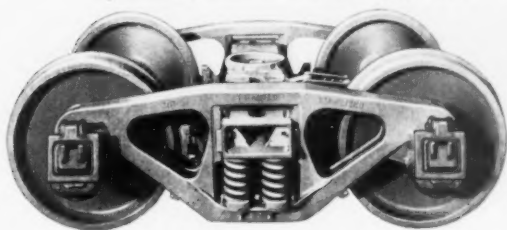
Higher speeds! Tighter schedules! These combine to give equipment and loadings many opportunities to become damaged. Damage claims are a serious problem for any road.

Barber Stabilized Trucks give smoother rides, maximum protection. Destructive forces are self-dampened through the coordinated action of Barber Stabilizer components. Actuating springs, friction shoes and special wear plates . . . arranged in a unique and ever-ready suspension system . . . guard against vertical shocks and bouncing, increase their frictional resistance on the downward stroke.

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ment Co., Ltd., Montreal 2.

plan of wiring prevents the series power contactors from picking up and keeps the shunt and battery fields de-energized in case the starting contactors are stuck closed. It is apparent that the wiring on the GP-7 unit in question followed the plan outlined in Case 1, since the series contactors actually picked up with the reverser switch closed, and with the shunt and battery fields not energized.

We are now ready to consider what caused the locomotive to move with the engine idling, with the shunt and battery fields de-energized, with the starting contactors stuck closed, with series contactors picked up or closed by movement of the reverser to either forward or reverse positions. This situation left the battery

and auxiliary generator across the main generator leads. The series power contactors being closed served to connect the traction motors to the main generator. Since the storage battery was also connected directly across the main generator leads, it supplied current to the traction motors to move the unit during the moment when the reverser switch caused the series contactors to close.

A well-charged battery, supplying 70 to 75 volts direct current to traction motors will cause them to move the unit on a level track. To give an idea of what a comparatively low voltage source of power can do with traction motors, direct current welding machines set at 60 volts are regularly used to motor out traction mo-

tors, removed from truck on the repair shop floor. Leads from a direct current welding machine are often connected to a traction motor in an assembled truck, to move the truck on the shop floor, into position beneath a jacked up car body. From this practice, it is understandable that current from the 74-volt battery will cause the locomotive unit to move when the series power contactors are closed.

The *a-b* interlocks of starting contactors, when wired as in Case 2, will avoid the trouble you experienced. It also avoids any possibility of the main generator sending high voltage power into the low voltage control system when the starting contactors are stuck closed. This should help clear up the problem.

How Much Do You Know About Brushes?

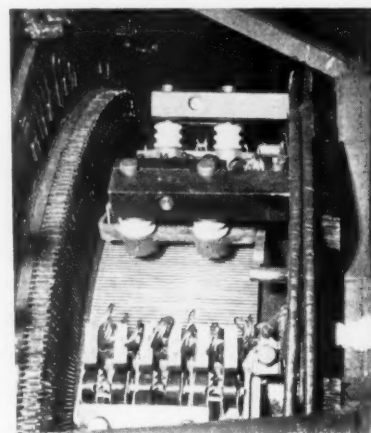
How Do Solvents Affect Commutation?

THE DISASTROUS EFFECT which promiscuous use or misuse of solvents in the cleaning of equipment can have is a real problem. To improve the commutating characteristics of brush grades, nearly all brush manufacturers today include some form of treatment either for the purpose of reducing friction or for film forming properties or both. In all cases, the film is susceptible to the action of solvents, and in many cases the impregnant of the brush is also subject to action by solvents. Solvents of the chlorinated hydrocarbon type, in other words those containing chlorine, are ruinous to film and friction values of brushes. In one case, we observed a generator where solvent had been used freely all over the brushes and the commutator. This unit came off the road dead with the generator brush shunts burned off, spring fingers burned off, and brushes practically burned out of the holders. Some holders were even melted. The basic cause of the trouble was traced to selective action of the brushes, induced by the use of solvent.

What I believe happens in these

This is the seventh of a series of questions and answers which are appearing each month.

cases is that one of the brushes in a given holder will carry most of the load due to the fact it doesn't get quite as much solvent treatment as the others, and during this extreme overload, the connections are overheated and become high resistance. As the generator continues to function, the next brush least affected by the solvent comes into action and normally operates in parallel with the first brush. However, the connections on the first brush are now high resistance and the second brush proceeds to carry all of the load. The vicious cycle continues until all four or five brushes in the holder have been subjected to the same heat treatment. Now, since all of the connections are high in resistance, the lowest resistance path for the current to flow into the brushes is through the spring finger and *A* clip. When the current starts to divert, and more and more of it goes through the spring finger and *A* clip, the spring fingers become heated. As they heat the resistance changes until eventually the tips of the spring fingers are burned off and then general destruction takes place. Laboratory tests have shown that when a commutator has been

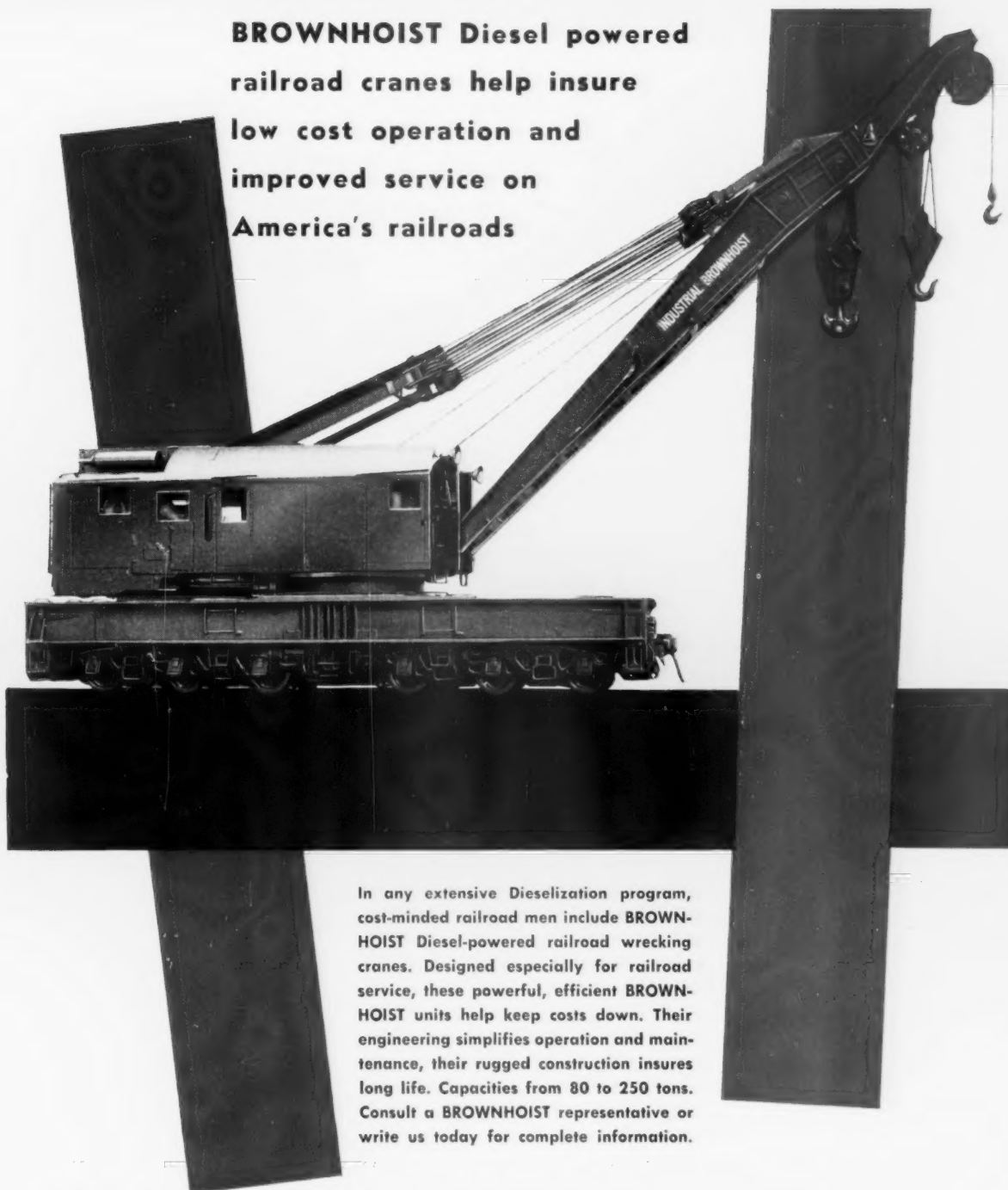


washed with solvents, the friction of the brushes is increased temporarily as much as 200 or 300 per cent until such time as the brushes can lay down a new film. It is true that the film appears to be untouched when you inspect it after the solvent has evaporated but nevertheless it does strip off and has to be rebuilt by the brushes before the friction level goes down.

There are times when it is impossible to clean up a machine without the use of solvent. But there is no time when it is necessary to do this job without first removing the brushes from the holders and out of the machine to prevent their coming in contact with the solvent material.

By K. R. MATZ
National Carbon Company

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HANDLING EQUIPMENT
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BROWNHOIST

SUPPLY TRADE NOTES

(Continued from page 18)

000 plastics research laboratory at its East Chicago (Ind.) plant. The laboratory, equipped to test all existing plastics and to develop new types and new uses, is divided into three sections—a physical testing room, a unit to conduct research in reinforced plastics, and a section equipped for research on both vacuum-forming and injection molding of thermoplastics.



J. T. Degman



J. E. McNamara



R. O. Wilder



G. Dusenbury

OAKITE PRODUCTS, INC.—John T. Degman has been assigned to Chicago as special railway representative. Mr. Degman was formerly assistant to the vice-president of the Rail Joint Company.

JOURNAL BOX SERVICING CORPORATION.—James E. McNamara, vice-president, has been elected president, succeeding Leo C. McNamara, who is now chairman of the board and chief executive officer.

NATIONAL FORGE & ORDNANCE CO.—Robert O. Wilder, executive vice-president, has assumed the duties of president, succeeding John C. Harrington, who has been named chairman of the board of directors.

SIMMONS-BOARDMAN PUBLISHING CORPORATION.—George Dusenbury has joined Simmons-Boardman at New York, as vice-president and editorial and promotion director, according to an announcement by Arthur J. McGinnis, executive vice-president and treasurer.

Mr. Dusenbury has been a magazine consultant for the past 10 years, specializing in the business field, but serving several general magazines here and abroad. He has held annual editorial clinics for the Associated Business Publications and seminars at Columbia University and the University of Tennessee. Prior to that Mr. Dusenbury taught "Technique of the Picture Story" at New York University. He also was director of Visual Research for Look Magazine. Before going with Look, Mr. Dusenbury was on the staff of Compton Advertising, Inc., of New York.

Mr. Dusenbury's interest in journalism and the printed message has been life-long. At Highland Park High School, Detroit, class of 1927, he was editor of "The Spectator," the school newspaper, and president of the Michigan Interscholastic Press Association.

He was graduated from the University of Michigan in 1931 where he edited "Michiganensian," the university yearbook, and the Michigan campus magazine.

One of his first jobs encompassing both editing and advertising was with the Plymouth Division of Chrysler Corporation in Detroit where he served as advertising production manager, copywriter and editor of the dealer house

(Continued on page 54)

IT'S THE

*** MOST**

ANNOUNCING
the Sensational **NEW**
miller
GOLD STAR
SR

It **DELIVERS** maximum arc stability for:

- Sounder, denser welds — and more of them — in less time, with . . .
- ALL electrodes, in . . .
- Any and all positions



How is this performance possible? THE MILLER GOLD STAR SR introduces a . . .
NEW transformer
plus
NEW weld stabilized current
plus
NEW completely sealed semi-metallic rectifier

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Tested across the country by practical, critical, hard-bitten working weldors, here's what they say about the new MILLER GOLD STAR SR:

- "It's the DC performance I've always wanted"
- "here's DC welding current that's . . . perfect!"
- "positively handles ALL electrodes better"
- "best deal I've seen for v and o work"
- "easiest arc starting in my experience"
- "smoothest arc I ever used . . . and . . . quiet!"
- "It's just plain the MOST"

Complete particulars on the MILLER GOLD STAR SR, including inert gas and automatic fixture welding, is now available on request.

"... if it's Miller you know it's the finest . . ."

miller Electric Manufacturing Company, Inc.
APPLETON, WISCONSIN

distributed in Canada by CANADIAN LIQUID AIR CO., LTD., Montreal

You wouldn't tolerate low voltage, but—

Do you have Full Air Pressure?

**Every pound below design pressure
drops air tool performance nearly 2%**

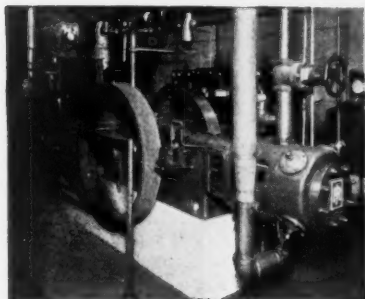


Keep production going...use Ingersoll-Rand air tools and keep pressure up with Ingersoll-Rand compressors.

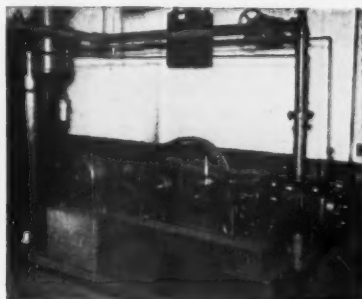
*Perhaps an Ingersoll-Rand ES Compressor will
build your Air Power System to full capacity*

Modern, time-saving, labor-aiding air tools are designed to operate at a working pressure of 90 pounds. As the pressure falls off, so does the performance of the tool. Studies have shown that by increasing air pressure *at the tool* from 70 psi to 90 psi, you can increase the available power of the average air tool by 37%. This means a big increase in productivity—big savings in time and cost.

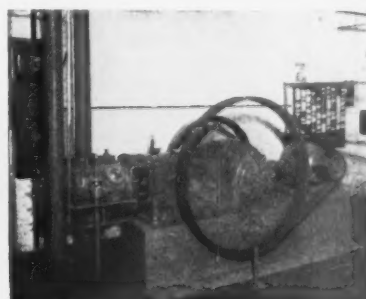
If your increased usage of compressed air has outstripped compressor capacity, an additional heavy-duty ES compressor will be a highly profitable investment. Your Ingersoll-Rand representative will be glad to help you make an air survey and recommend the most economical solution to the problem.



This Class ES compressor provides 100 psi air for operating air tools in the foundry and machine shop of a large manufacturing company.



For more than 15 years, this ES compressor has been providing a dependable supply of air at 100 psi for general plant service in an Eastern metal products factory.



Air tools used in a large woodworking plant are operated at top efficiency by the heavy-duty ES compressor shown above, delivering air at 100 psi.

Only I-R compressors have CHANNEL VALVES



Known for high efficiency, quiet operation and durability. Entirely different. Each valve is a combination of rigid stainless-steel channels and leaf springs, with trapped-air spaces which cushion action.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

COMPRESSORS • GAS AND DIESEL ENGINES • ROCK DRILLS • PUMPS • TURBO-BLOWERS • AIR AND ELECTRIC TOOLS



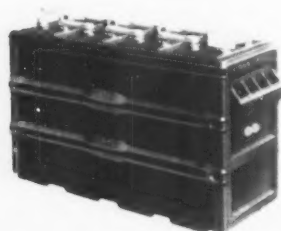
NEW BULLETIN gives latest tips on C&D Diesel Starting Batteries

Tells how to reduce locomotive maintenance
... how to 'start your Diesels fast'

Motive power men and purchasing agents will find page after page of useful money-saving information in this comprehensive new bulletin on "Diesel Locomotive Batteries." Expressly prepared to help railroad men specify the right type batteries for dependable Diesel cranking service, this illustrated guide gives the complete "inside story" on

the construction and operation of powerful C & D *Silver-Clad*® batteries. Conventional lead-antimony types... special low types... as well as the latest lead-calcium extra-long-life types are covered. Detailed charts show you how to specify the exact type battery you need for reliable low-maintenance operation.

Write for a copy. You'll find it an important addition to your technical library.



Batteries built to give quick, sure starts...

With extra-thick, extra-long plates... and exclusive *Silver-Clad* construction... C & D Diesel Starting Batteries provide power-plus. "Better Built Batteries" also assure:

- high sustained voltage during cranking
- reduced connector loss
- reduced maintenance requirements
- long, dependable operating life

WRITE FOR BULLETIN DL-577

C&D BATTERIES, INC.
of Conshohocken, Pa.
SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

SUPPLY TRADE NOTES

(Continued from page 52)

organ. He later left to go with Ross Roy, Inc., Detroit, as a writer and account manager. Other experience includes a stay with J. Stirling Getchell, Inc., of New York, as a copywriter and the Allis-Chalmers Manufacturing Company of Milwaukee as assistant advertising manager.

A member of Sigma Delta Chi, professional journalistic fraternity, and several honor societies including Phi Eta Sigma, Sphinx and Michigamua, Mr. Dusenbury is also the author of "The Language of Pictures," and with his wife, Jane, co-authored another book, "How to Retire To Florida," published by Harper & Bros.

NATIONAL MALLEABLE & STEEL CASTINGS CO.—Dr. W. Kenneth Bock, manager of metallurgical research, has been appointed director of research.

MAGNUS METAL CORPORATION.—C. Robert Weaver, Los Angeles plant manager, has been appointed western sales representative at Los Angeles.

C & D BATTERIES, INC.—A new division to undertake basic research on storage batteries has been established by C & D, in charge of Dr. Eugene Willhnganz, director of research.

STRATOFLEX, INC.—A new branch plant has been opened at Fort Wayne, Ind., under the direction of J. C. Nolan, plant manager.

INTERNATIONAL EQUIPMENT COMPANY, LTD.—C. W. Smith, assistant vice-president, has been appointed vice-president, Railway Division.

OHIO PISTON & MACHINING CO.—The *Ohio Piston Company*, Cleveland 14, manufacturer of a carrier for railroad pistons, has changed its name to the Ohio Piston & Machining Co.

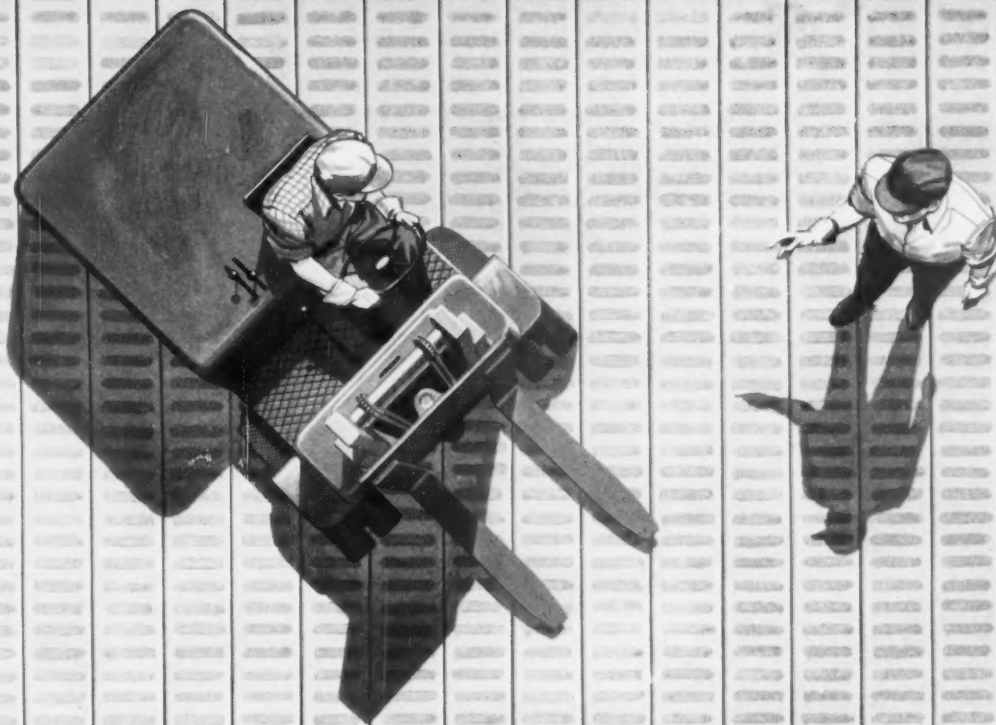
AMERICAN AIR FILTER COMPANY.—Robert E. Reid has been appointed a special sales engineer, working out of the Boston office. W. N. Murray succeeds Mr. Reid as branch manager at Boston.

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY.—George M. Muschamp, vice-president in charge of engineering, has been elected a Fellow of the American Society of Mechanical Engineers.

DEVILBISS COMPANY.—The DeVilbiss direct factory branch at Toledo, Ohio, has been moved to new and larger quarters at 1100 Northside Drive, N. W. Roy Steele continues as divisional sales manager.

ALCO PRODUCTS, INC.—John M. Howard, Jr., manager of the company's Latrobe, Pa., plant, has been named general manager of the spring and

(Continued on page 58)

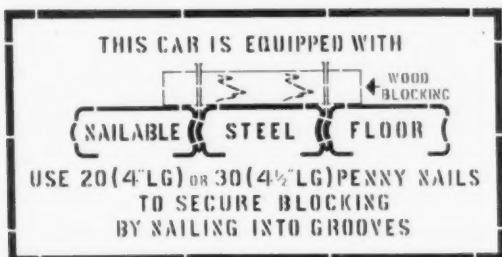


More loadings have traveled safely on N-S-F equipped freight cars than on those equipped with any other nailable steel flooring.

N-S-F[®]: PIONEER IN NAILABLE STEEL FLOORING

12 years of actual use in freight cars have proved the superior qualities of NAILABLE STEEL FLOORING. Sixty-two of America's leading railroads have installed NAILABLE STEEL FLOORING in over 60,000 gondolas and boxcars; the savings these roads have enjoyed is ample proof of NAILABLE STEEL FLOORING's ability to deliver the goods.

You can get information on the original nailable steel flooring from N-S-F representatives in Chicago, New York, Philadelphia, St. Louis, Cleveland, San Francisco, Minneapolis and Atlanta. In Canada, N-S-F is made and sold by International Equipment Co., Ltd., Montreal.



The stencil that smart shippers look for in freight cars. They know it identifies a car with better lading protection. And smart railroaders know N-S-F can help reduce Cause F loss and damage claims.

N-S-F is a registered trademark of Stran-Steel Corp.



NAILABLE STEEL FLOORING
Originated and sold by—
STRAN-STEEL CORPORATION

Dept. L • Detroit 29, Michigan • Division of



5

Reasons why
You can count on
Fairbanks-Morse
Unit Exchange

1

PROMPT DELIVERY

Due to a 60% increase in the F-M unit exchange program, there are O-P engines of every rating and major accessory group ready for prompt shipment on your order.

2

LOW-COST UPGRADING

This F-M program enables you to effectively meet increased tonnage demands being made on your motive power fleet, yet reduces costs all along the line—lower maintenance, reduced shop facilities and lower parts inventory.

3

FACTORY-PERFECT

The only engine better than the O-P you now have is one "made better" by F-M craftsmen who have the skill and techniques acquired through daily experience with only *one* engine design.

4

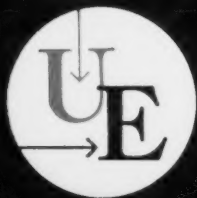
NEWEST SPECIFICATIONS

F-M's continual search for better engine performance and life can substantially improve the O-P engine, and its components of five to ten years ago in many respects. Unit exchange equipment meets the newest specifications.

5

NEW WARRANTY

Each engine, blower, pump, injection system, generator and traction motor in the F-M unit exchange program is warranted to give the same performance as new equipment.



Unit Exchange

The only engine better than the O-P you have is an Opposed-Piston diesel made better by Fairbanks-Morse—available NOW through F-M unit exchange.

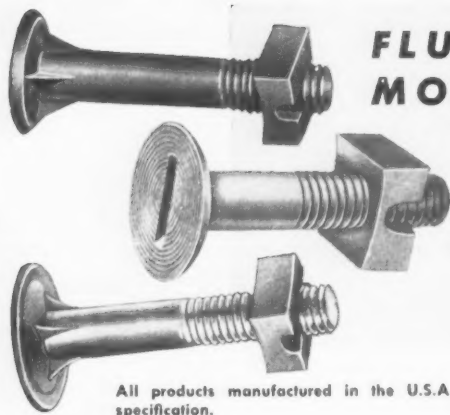
For full details and delivery schedules, write: Diesel Locomotive Service Dept., Fairbanks, Morse & Co., Chicago 5, Illinois.



FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL LOCOMOTIVES AND ENGINES • MOTOR CARS AND RAILROAD EQUIPMENT • ELECTRIC MOTORS • GENERATORS • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAND LAMPS.



**FLUSH FIT
MOISTURE
TIGHT..**

**...WITHOUT
COUNTERSINKING**

Lewis sealite car bolts

Each Lewis Sealite car bolt has special "wood engineering" beveled head for flush, moisture tight, fit... without countersinking. Standard and large-head car bolts have patented fins that grip wood, prevent turning... slotted head bolt can be set with screwdriver. Available in Hot-Dip galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

All products manufactured in the U.S.A. to A.S.T.M. specification.

Lewis BOLT & NUT COMPANY
304 Malcolm Ave. S. E.
MINNEAPOLIS 14, MINNESOTA



SUPPLY TRADE NOTES

(Continued from page 54)

forge division, with headquarters at Latrobe. **Robert W. Pittman**, regional manager on the Pacific coast, has become Central regional manager, succeeding **Marshall D. Raymond**, now marketing manager at Latrobe. **E. J. Brown**, district manager in Chicago, succeeds Mr. Pittman as regional manager at San Francisco.

GENERAL ELECTRIC COMPANY.—**Thomas F. Perkinson**, manager of transportation, who assisted in developing and designing some of the earliest diesel-electric locomotives and in the design and application of air-conditioning equipment for railroad passenger cars, has been elected a Fellow of the American Society of Mechanical Engineers.

ACF INDUSTRIES, INC.—**William P. Hindman**, works manager of the Milton, Pa., manufacturing plant of ACF, has been appointed vice-president of ACF's newly formed Advanced Products division, at Milton.

CRUCIBLE STEEL COMPANY OF AMERICA.—**John W. Slattery**, midwest supervisor, stainless steel sales, at Chicago, has been appointed general supervisor, stainless-steel field sales, Pittsburgh.

GENERAL STEEL CASTINGS COMPANY.—**Harry R. Bartel**, assistant vice-president—sales, has retired after 41 years' service. Coming from the New York Central, Mr. Bartel joined Commonwealth Steel Co., a predecessor of GSC, in 1916. He served in the engineering department before transferring to sales work. From 1931 to 1947 he was manager of Western District sales for GSC.

Mr. Bartel has established offices in St. Louis as a manufacturers' representative.

A. M. BYERS COMPANY.—**Norbert J. Connors**, former president of Connors Steel Warehouse, Inc., has joined Byer's steel sales department, and **Morton M. Jenkins**, formerly with Pittsburgh Forge

ings Company, as steel sales metallurgist. **William R. Doreen** has become a field service engineer at Houston.

Obituary

A. LOU CAPRA, 54, traveling field representative for Miller Lubricator Company, died recently at his home in Denver, Colo.

EMMETT J. COLE, western sales representative of Magnus Metal Corporation, died in Los Angeles, August 9, following a brief illness.

DOUGLAS M. DEWITT, western manager, Reide Manufacturing Company, died August 11 in Chicago.

HAROLD H. JOHNSON, 56, director of research for Nation Malleable & Steel Castings Company, Cleveland, died in Cleveland Clinic Hospital, August 22.

EQUIPMENT

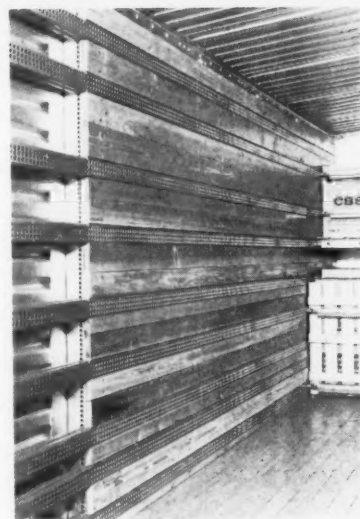
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to batteries now used in larger locomotives of 1,200 hp and greater.

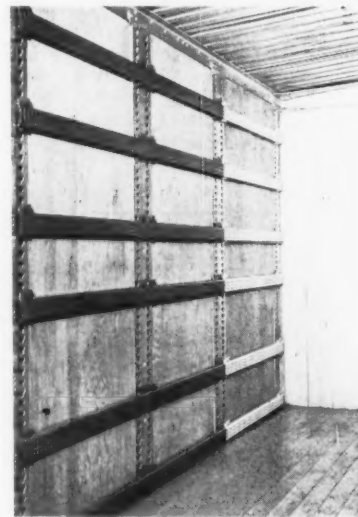
The batteries may also be applied to reduce number of batteries in inventory. For example, an MGD-19 which develops required cranking and standby capacities for large locomotives, is designed so that it may be used in both road locomotives and smaller switching locomotives, because of the smaller dimensions of the MGD-19. *Exide Industrial Division, Electric Storage Battery Company, Dept. RLC, Box 8109, Philadelphia 1, Pa.*

Permanent Dunnage For Freight Cars

The "Tri-Belt" loading system is a new type permanent dunnage for freight cars. Two types of "Tri-Belt" systems are available: (1) a permanent installation of horizontal steel side rails, welded in position between wood wall members and flush with the wall surface. (2) an adjustable installation with removable



Permanent "Tri-Belt" installation



Adjustable "Tri-Belt" installation

side rails which fit into T-slots on vertical channels. The channels are fixed in position during car construction.

The manufacturer offers the adjustable

(Continued on page 60)

USG[®] BRUSHES AY32 AND 2306 ARE THREE WAYS **BETTER**



LOW COMMUTATOR MAINTENANCE

Because of their long life and reduction of copper drag which minimizes flashovers, USG Brushes AY 32 and 2306 have proven convincingly that they reduce the maintenance cost on Diesel-Electric locomotive generators.

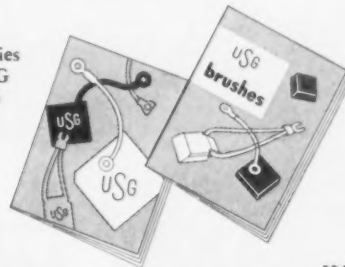
LONGER LIFE—MINIMUM WEAR

Primarily because of their purity and density, USG Brushes operate perfectly for substantially longer periods of time than the average type brush. Naturally, this means reduction in delays due to brush replacement.

PERMANENT SHUNT CONNECTION

In recent years nearly every reputable brush manufacturer has improved the anchorage of the shunt connections: none, however, are quite as firm or quite as permanent as the method employed on USG Brushes, called STATITE[®]. The shunt can't be jerked out and, of course, it does not jar loose.

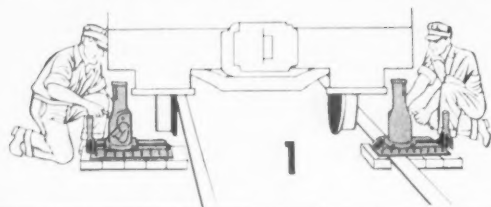
Write for your copies of the latest USG Brush Catalog B-56 and the new USG Brush Grade Supplement.



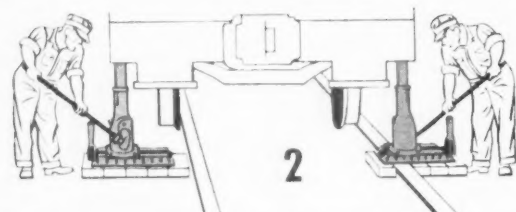
THE UNITED STATES GRAPHITE COMPANY

DIVISION OF THE WICKES CORPORATION, SAGINAW 13, MICHIGAN
GRAPHITAR[®] CARBON-GRAPHITE • GRAMIX[®] SINTERED METAL PARTS • MEXICAN[®] GRAPHITE PRODUCTS • USG[®] BRUSHES

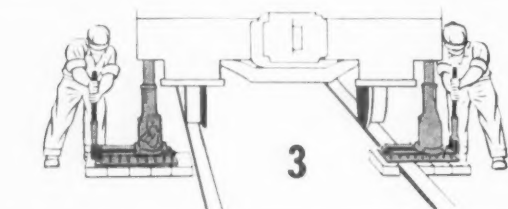
How to get back on the track quickly **Without A Crane!**



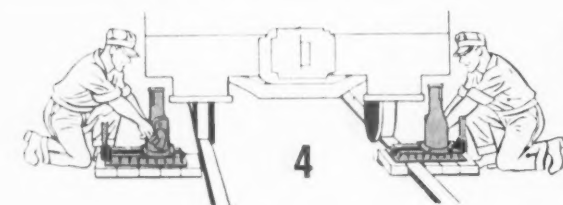
Place a Duff-Norton traversing base and jack beside each derailed truck.



Jack up the car or locomotive until wheels clear top of rails.

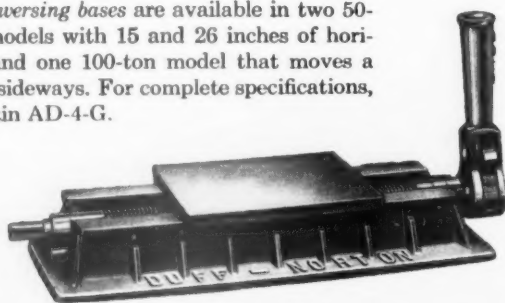


Move jacks horizontally simultaneously on traversing bases until wheels are in alignment with rails.



Lower wheels; you are back on the track, quickly, inexpensively and without danger of distorting car or locomotive frame.

Duff-Norton traversing bases are available in two 50-ton capacity models with 15 and 26 inches of horizontal travel and one 100-ton model that moves a load 20 inches sideways. For complete specifications, write for bulletin AD-4-G.



Duff-Norton Jacks

DUFF-NORTON COMPANY

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION: Danville, Illinois

Ratchet Jacks, Screw Jacks, Hydraulic Jacks, Special Worm Gear Jacks,
Ratchet Hoists, Electric Hoists, Load Binders, Spur Gear Hoists

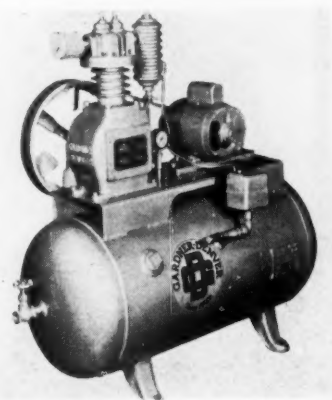
EQUIPMENT

(Continued from page 58)

ble system as a solution to many "special car problems," because side rails can be removed, stored and the car used for bulk loading. One man can easily handle and position a section of side rail. Rails can be removed by lifting the latches up and out in one motion.

Side rails can be extended through the doorway and removed from either inside or outside the car.

"Tri-Belt" crossmembers can be rotated in 90-degree increments about their axis to get increased holding strength in the desired direction. The manufacturer claims this ability to shift the holding strength of the crossmembers means fewer members are needed to hold the load. The fittings on the crossmembers are slightly off-center so they can be rotated and repositioned for closer nesting. *Sparton Corp., Tri-Belt Division, Dept. RLC, Jackson, Mich.*



Small Compressor

This unit, known as model CACB, is designed to provide oil-free air for the operation of instrument controls as well as for paint spraying. Heart of the compressor is said to be in the carbon parts in the cylinder which require no oil or water lubrication.

The single-stage, air-cooled unit is available in base or tank mounted designs. It supplies 4 to 5 cu ft of air per min and is suitable for discharge pressures of 40 to 100 psi. Automatic start and stop controls are supplied as needed. *Gardner-Denver Company, Dept. RLC, Quincy, Ill.*

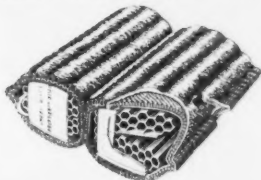
Table Saw Safety Guard

This guard is a heavy duty tool which simplifies production, increases output.

(Continued on page 62)

FOR PROGRESSIVE RAILROADING

111,000 CARSETS TO DATE

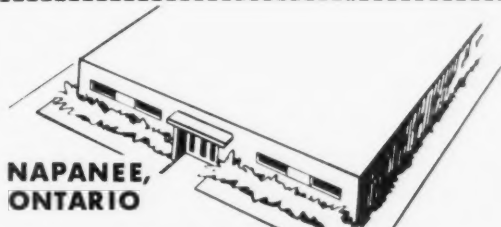


MILLER PAD LUBRICATORS

*Immediate
Delivery
IN
Any Quantity*



WINONA,
MINNESOTA



NAPANEE,
ONTARIO

Your schedule of deliveries to
either plant will be met as
specified.

MILLER
LUBRICATOR CO.
WINONA,
MINNESOTA

NAPANEE
IRON WORKS
Napanee, Ont., Canada
Montreal, Que., Canada



New York Central System Photo

Self-propelled, and equipped
with efficiency in mind

EX-CELL-O PINS AND BUSHINGS
GIVE YOU PERFORMANCE BONUS

Rocketing into the night, this rail car is using safe and secure Ex-Cell-O Pins and Bushings. Why do so many railroad men count on Ex-Cell-O pins and bushings for efficiency?

One reason is the durable outer casing that takes severe stress in stride. Another reason is the soft ductile core that takes the shock out of strain. But the best reason is that railroad men know every Ex-Cell-O pin and bushing often offers up to a million miles of service. Well-stocked warehouses assure express-speed delivery and an exceptional service policy guarantees satisfaction long after the sale. Available separately or assembled.

Why not contact your Ex-Cell-O Representative or Ex-Cell-O, Detroit, soon.

EX-CELL-O
CORPORATION

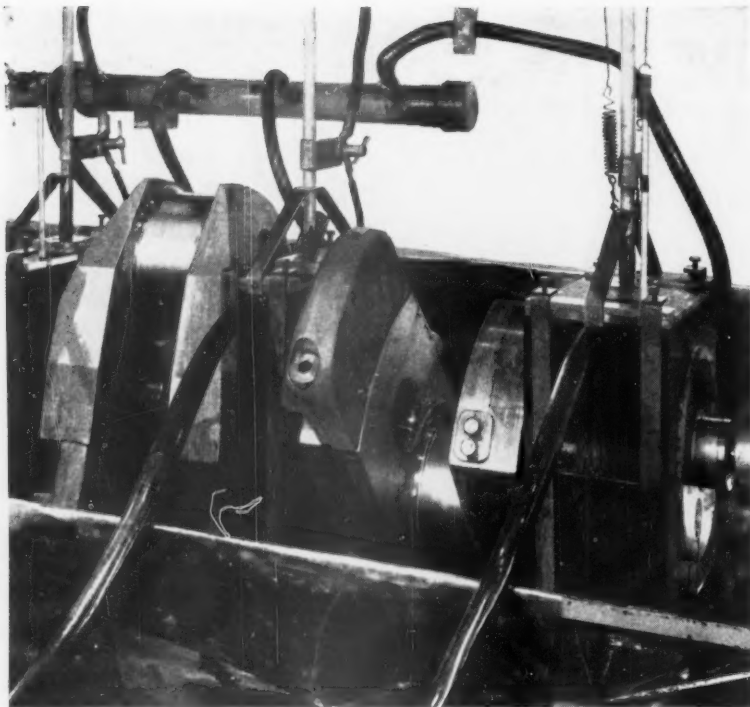
EX-CELL-O
FOR
PRECISION



57-63

RAILROAD DIVISION, EX-CELL-O CORPORATION, DETROIT 32, MICHIGAN



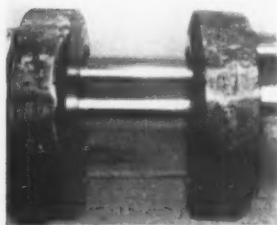


THIS REBUILT CRANKSHAFT IS CHROMIUM PLATED BY A SPECIAL NATIONAL FORGE PROCESS

When your crankshaft is reconditioned at National Forge, here's how it is chrome plated. Each bearing surface is individually boxed and plate thickness is built up only as required. Different thicknesses—over $\frac{1}{8}$ " if needed—can be added to different surfaces of the same crank. Because only the boxed surfaces are exposed to plating action the fillet areas retain their original strength.

When applied by National Forge specialists, chrome plating is uniform and smooth. Regrinding is kept to a minimum and your reconditioned crankshafts are returned to you meeting the original shaft's specifications.

No other plating company has National Forge's experience in handling both new and rebuilt crankshafts. So why not try National Forge specialists on your crankshaft rebuilding jobs?



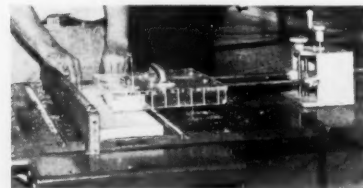
This is a finished, repaired crankshaft after processing by National Forge.

For more details on crankshaft repair, write for Bulletin RC-2.

NATIONAL FORGE
AND ORDNANCE COMPANY
IRVINE, WARREN COUNTY, PA.

EQUIPMENT

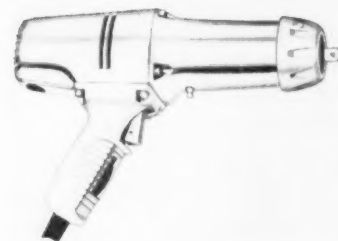
(Continued from page 60)



and protects fingers and eyes against crippling injuries common to circular saws. The guard is guaranteed to hold stock down against the revolving blade; hold stock on edge firmly against rip-fence; make kick-back impossible; enable the operator to clearly see as he saws; protect the operator against flying wood chips; eliminate the use for C-clamps; etc.

A transparent shield of shatter-resistant Plexiglas plastic, $\frac{1}{2}$ in. thick, and covers the saw yet allows full vision for mitering, cross cutting, compound mitering, ripping, rabbeting, tenoning, dadoing, feathering, diagonal sawing, template cutting, drop sawing, plowing and tonguing.

A flick of the knob sets the guard into one of three operating positions in aligned holes in extension plates attached to the table top. The guard itself is capable of providing horizontal and vertical pressure, and can be used as an over-riding fence for angular work. *Brett-Guard Company, Division of Glenwood Industries, Inc., Dept. RLC, Englewood, N. J.*



Electric Wrench

The Power Core of this impact wrench is a neoprene-steel energy accumulator, to eliminate the need for many close tolerance thrust and ball bearings, springs and cams.

Twisting the nose cap permits adjustment of the torque to the requirement of the job. The tool is designed to do the work of two wrenches— $\frac{3}{8}$ in. to $\frac{1}{2}$ in. bolt capacity—with reduced operator shock.

It reaches maximum torque in 6 sec, has a torque range of 105 to 275 ft-lb and delivers 1,600 to 1,800 impacts per min. *Portable Electric Tools, Dept. RLC, 320 West 83rd st., Chicago 20.*

(Continued on page 64)

NEW "RED CAP" BRUSHES BY SPEER



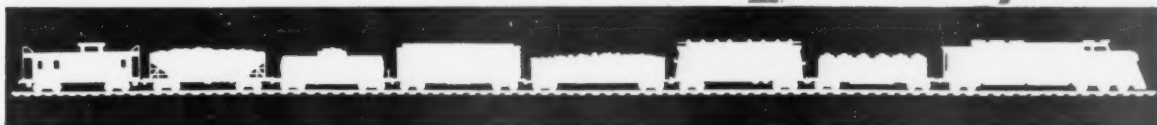
On your most rugged haul, try Speer's new "Red Cap" brushes. They are made to stand up under the toughest conditions of vibration, sudden shocks, rough roadbeds and long-haul running. Special double-duty shock absorbers take the beating...brushes themselves aren't touched. Results are longer brush life (breakage and shunt-fraying virtually eliminated), maintenance-free service, improved commutation and real long-haul reliability.

"Red Cap" brushes are yet another example of Speer's leadership in brush design. There's a Speer brush exactly right for every railroad application. Write today for details.



How "Red Caps" Work

Specially designed hard rubber cap, laminated to softer neoprene pad, is mounted at top of brush. Initial impact of vibration and shocks is broken by hard cap. Design insures even distribution of remaining pressures over entire surface of soft underpad, allowing full absorption of vibration and shocks with minimum of compression. Hard cap also resists wear and indentation by spring finger, permitting free movement and most efficient operation of brush throughout its life.



SPEER *Carbon Co.*
St. Marys, Pennsylvania

EQUIPMENT

(Continued from page 62)

Plier Speeds Wiring

The long nose plier illustrated is designed to speed up wiring where the cut, hook and crimp method is employed.

Acting on a shear principle, this plier cuts hard or dead soft wire cleanly. The shear blade is removable and may be easily replaced if it becomes worn.

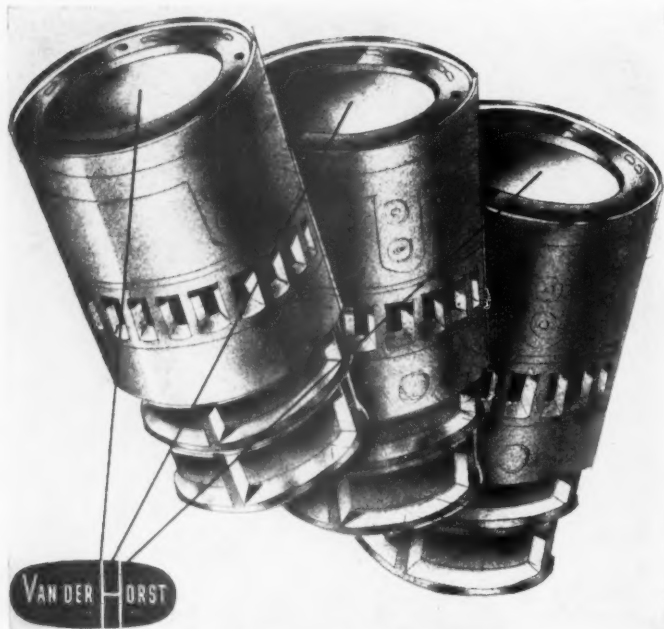
The reverse side of the plier has a milled section behind the knife so designed that when the wire is cut, it is



held in position and a turn of the hand forms a hook in one operation. This is particularly desirable when wiring in resistors. Resistor wires may be cut to

length, the hook formed and the hook closed all with the same tool. It is furnished with a self-opening coil spring and $\frac{1}{16}$ -in. diameter point. Mathias Klein & Sons, Dept. RLC, 7200 McCormick Road, Chicago 45.

5 big advantages of



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Good for the Life of your Engines

- INCREASES CYLINDER LIFE 3 TO 5 TIMES.
- INCREASES PISTON RING LIFE UP TO 50%.
- ELIMINATES STOCKING OF OVERSIZED PISTONS AND PISTON RINGS.
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HILVERSUM, HOLLAND
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* SparTan Engineering

Attachable Welding Plugs

There is now available a new, low-cost set of connectors (mating male and female plugs) for use in welding cable leads and welding whips. Supplied in one size only, that can be quickly attached to all cable sizes from #4 through #4/0 AWG, these units have a maximum welding service rating of 550 amp. A few of the outstanding features reported by the manufacturer are water-tight Neoprene insulating sleeves, —positive twistlock connections, and distortion-proof construction. Joy Manufacturing Company, Electrical Products Division, Dept. RLC, 1201 Macklind ave., St. Louis 10, Mo.



Tape Is Both Insulation and Sheath

A new electric tape is now being offered which is designed for splicing and terminating either plastic or rubber cables and which, under 2,000 volts, serves as both insulation and sheath. The tape possesses optimum electrical characteristics, and is also resistant to weather, chemicals, flames and mechanical abuse. It is made in five colors for phase and circuit color-coding.

Under application, the tape rapidly fuses into a solid, homogeneous wall around the connection. No adhesives are involved. Known as Okoweld, the tape is made by the Okonite Company, Dept. RLC, Passaic, N. J.

(Continued on page 66)

On its second fleet of 70 GP 9 locomotives

Illinois Central again equips diesels with Air-Maze oil bath filters

The reason is simple... longer wear from cylinder liners, pistons and rings; less cost for fewer repair parts and fewer maintenance manhours.

This is the record *after two years' testing* of oil bath filters on switchers, road switchers, and passenger locomotives.

And this is the reason why the second fleet of 70 diesels like the first fleet... 245,000 horsepower in all... is completely protected with Air-Maze oil bath filters.

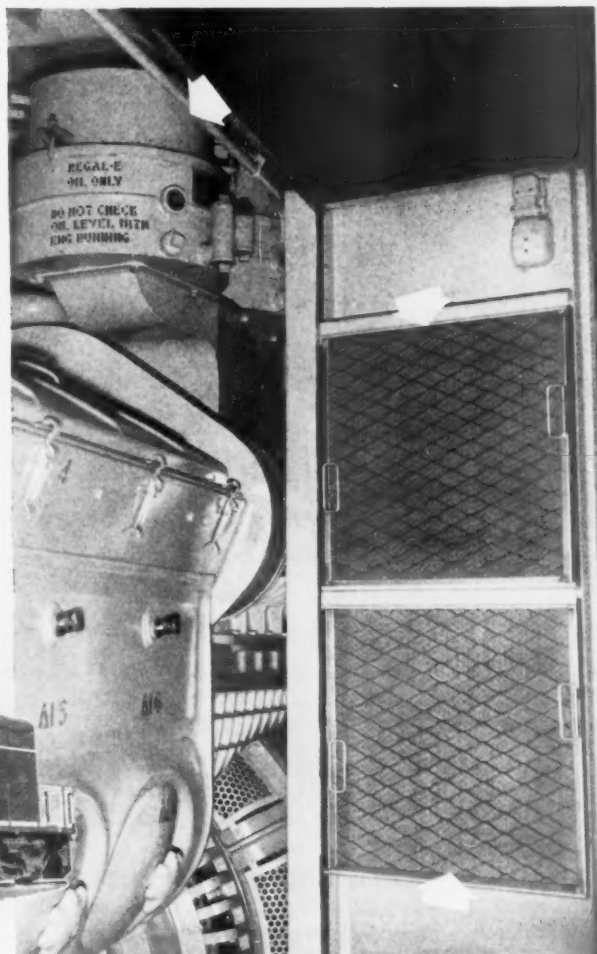
Actually 59% more fine dust is removed by Air-Maze oil bath filters than the next best filtering device. And by filtering the air in a bath of oil, high filtering efficiency of the oil bath filter is maintained even at lowest engine speeds.

What's more, the oil bath filter operates 3 months or longer with minimum maintenance.



For information write your locomotive builder, or Air-Maze Corporation, Cleveland 28, Ohio, Dept. RL-10.

AIR-MAZE
The Filter Engineers



Oil bath filters (upper left) maintains 92% efficiency or better in cleaning intake air in a bath of oil.

P5RR car body filter panels (upper right) also used on this railroad to pre-filter air going to engine, traction motors, compressor, and generator.



ENGINE AIR FILTERS • CAR BODY FILTERS • LUBE OIL FILTERS • PASSENGER CAR FILTERS



NEW

Snap-on BASKET BOLT WRENCH



This special wrench N6057 reaches right through a port, connects to the bolt head and nut with little effort and is held firmly in position by spring tension. Drive sockets hold to the tool by means of a special locking pin device to prevent their dropping into the crankcase. The 1/2-inch square drive handle end is turned with a *Snap-on* ratchet wrench or sliding tee handle and can be torqued with a *Snap-on* Torqometer.

lets one man do the work of two, safely

Now a new *Snap-on* tool makes it possible for one man to handle hard-to-reach cross bolts at the bottom of new-type E.M.D. connecting rod baskets.

You can't miss with this new *Snap-on* special. It will prove to be a definite asset in your shop — making a slow, tough two-man job a safe, simple and fast one-man operation.

Here's a typical example of how the *Snap-on* railroad specialist can solve your problems. He has many tools like the basket bolt wrench, plus complete sets to speed many railroad repair and maintenance jobs.

Write for your copy of the *Snap-on* railroad tool catalog.

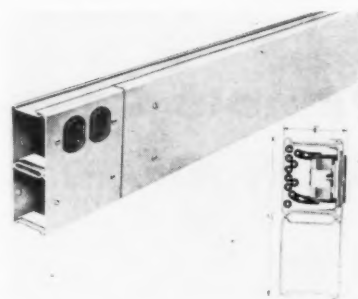
SNAP-ON TOOLS CORPORATION
Railroad Division • 8130-J 28th Avenue, Kenosha, Wis.

*Snap-on is the trademark of Snap-on Tools Corporation.



EQUIPMENT

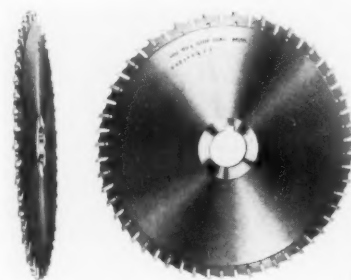
(Continued from page 64)



Raceway for High-Low Voltage Wiring

The product shown is a new metal surface raceway designed to carry both high and low potential conductors in a single run. It is called Twinduct and provides two separate 2-in. x 2-in. raceways for wire with a single screw-on cover. It incorporates the lay-in, no-fishing, principal of wiring.

Covers are available to adapt to any manufacturer's approved outlet devices up to 20-amp capacity. With devices, the system becomes an economical and efficient feeder duct. It is manufactured in 10-ft lengths, with half and three-quarter-in. knock-outs and mounting holes on 15-in. centers in the base. Bridges are furnished with each 10-ft section. The combined twin-raceway's overall measurement is 1 3/4 in. deep x 4 1/4 in. high. *National Electric Products Corporation, Dept. RLC, Gateway Center, Pittsburgh, Pa.*



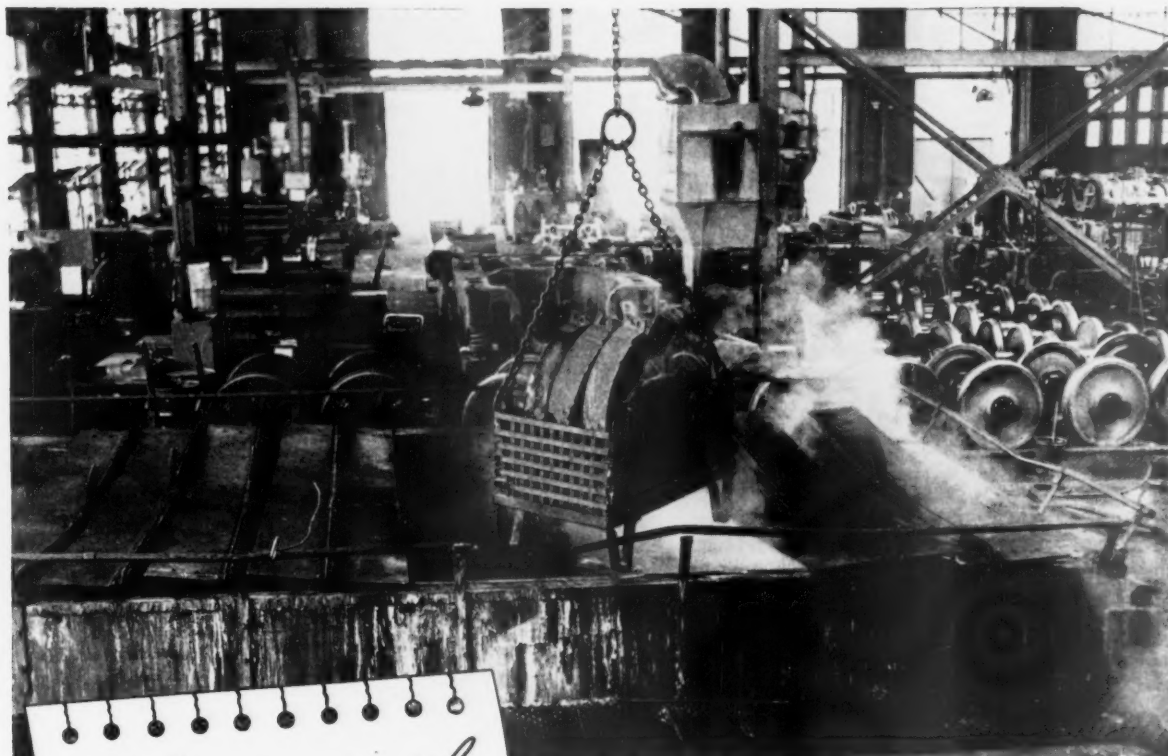
Milling Cutters

A line of thin alternate angle, free-cutting milling cutters for sawing or making narrow, accurate slots is made with tapered, serrated, self-locking blades. Blades are forged, high-speed steel, scaled down for narrow operations. Their reinforced bodies are forged of nickel-alloy steel.

Ground blade faces, and ample chip room are said to result in a free cutting action unequaled by regular slotting cutters. Replaceable blades range in diameter from 3 to 24 in., and in widths from 3/16 to 3/4 in. *Apex Tool & Cutter Co., Dept. RLC, Shelton 22, Conn.*

(Continued on page 68)

How the C&O cleans diesel parts with Wyandotte-11



*Charge vat with
4000 lbs of
Wyandotte-11.
Strengthen as needed,
Dump and
recharge only once
every two years!*

Besides saving with low-use-cost Wyandotte-11, C&O cuts down heat loss and steam costs through use of a cover. Cover plates may be lifted, or pushed back, overlapping each other.

THE 50,000-GALLON VAT AT C&O's HUNTINGTON, W. VA., SHOP is one of the largest of its kind in the East. Into a boiling solution of 4,000 lbs. of Wyandotte-11 Vat Cleaner, the C&O lowers diesel wheels, trucks, gear case covers, and many other hard-to-clean parts.

Results are excellent — have been for years! That's why the C&O, long famous for good housekeeping, has used free-rinsing, 100%-soluble Wyandotte-11 since even before the advent of diesels. From cleaning steam-locomotive trucks to heavy air-brake parts, Wyandotte-11 has given good emulsification, controlled uniform quality, long service life.

Take a look at *your* cleaning operations: see if Wyandotte-11 might not help you clean better, faster. Or maybe your Wyandotte representative can show you how to use some other research-developed, low-use-cost Wyandotte cleaner for your particular job. Call him *today!* Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.



Wyandotte REG. U. S. PAT. OFF. CHEMICALS

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COMPLETE LINE OF CLEANERS FOR ALL RAILWAY NEEDS

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... for all electric, Diesel-electric locomotives and other
electrical equipment testing requirements.
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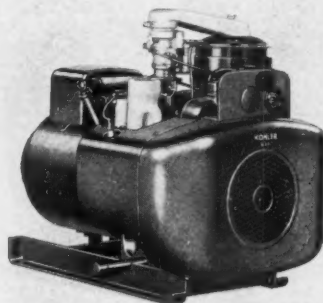
Electrical & Scientific Instruments

1316 ARCH STREET, PHILADELPHIA 7, PA.

BE SURE YOU'RE ON THE RIGHT TRACK
ALWAYS SPECIFY

EQUIPMENT

(Continued from page 66)



operate the generator is supplied by a short stroke, air-cooled, 4-cycle engine, developing 20 hp at a governed speed of 2,400 rpm. The plant features push-button starting. Kohler Company, Dept. RLC, Kohler, Wis.

HELPS FROM MANUFACTURERS

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information write direct to the manufacturer.

VALVES AND CYLINDERS. Two-color folder, "The Complete Line," features models in the 1,000 standard Rivett line. Illustrations and line drawings show keeper ring and tie rod designed cylinders and directional and functional flow valves. Each type of air or hydraulic valve and cylinder shown in cross-section. Mounting styles and connections, such as pipe, flange or sub-plate mounted, also illustrated. (Write: Rivett, Inc., Dept. RLC, Brighton 35, Boston.)

OIL-FIRED HEATERS.—Bulletin No. 460 contains pictures and descriptive

Power for Electro Magnets

The electric plant shown is designed especially for electric magnet operation. It is a d-c air-cooled unit which provides ample capacity for 39-in. and 45-in. magnets. Dimensions and weight have been kept to a minimum and the compact design of the plant permits ready installation on cranes of all sizes. The generator is a 7.5-kw, 230-volt d-c, 4-pole unit with compound winding. Power to

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data on oil-fired Caban heaters for heating cabooses, small depots and shops. (Write: *Vapor Heating Corporation*, Dept. RLC, 6420 West Howard st., Chicago 31.)

TRUCK PINS AND BUSHINGS.—23-page booklet contains complete ordering information on truck pins and bushing for all General Motors locomotives. Phantom drawings of each type of truck show pin and bushing locations. (Write: *Sales Promotion Section, Electro-Motive Division, General Motors Corporation*, Dept. RLC, LaGrange, Ill.)

INDUSTRIAL EQUIPMENT.—Catalog illustrates and describes in detail standard, storage equipment such as adjustable steel shelving, revolving bins, and cabinets, and lists such material-handling and specialized equipment as shelf trucks, stair-climbing trucks, aluminum ladders, work benches, waste receptacles, etc. (Write: *Precision Equipment Company*, Dept. RLC, 4411B Ravenswood ave., Chicago 40.)

HOUR METERS.—12-page catalog, No. 600, describes Hobbs direct current hour meters which record actual hours and minutes of engine operation on all kinds of equipment powered by internal combustion engines, gasoline or diesel. (Write: *John W. Hobbs Corporation, a Division of Stewart-Warner Corporation*, Dept. RLC, 1826 Diversey Parkway, Chicago 14.)

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**FAIRBANKS, MORSE CO. — OPPOSED PISTON
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**New General Electric Traction
Generators**

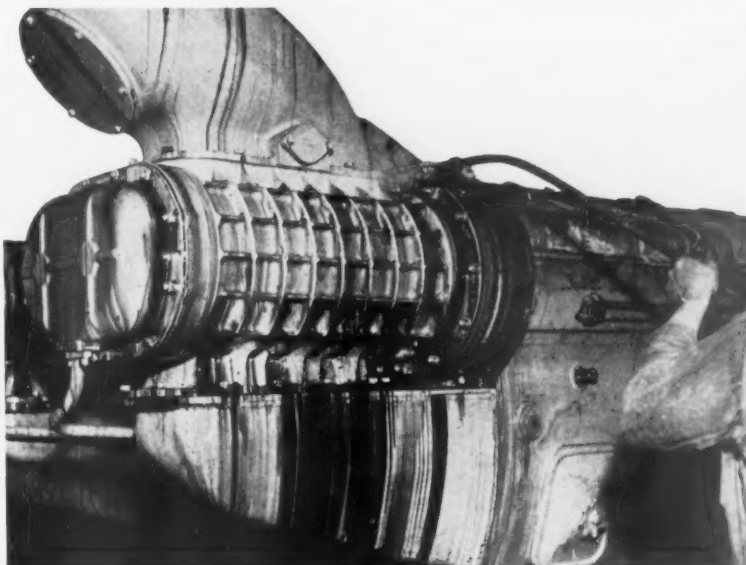
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Prove to yourself, in your own shop, how you can

**SAVE TIME
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DIESEL KLEAN HEAVY!

Lix cleans dirty engine parts **BRIGHTER THAN NEW . . .** and cleans them **FASTER!** Pistons, cylinder heads, bearings, fuel filters, brush holders, air brake assemblies, etc. are cleaned more thoroughly, and with a minimum of hard labor. No brushing or scraping . . . just soak the parts in Lix and rinse with water or mineral spirits. Lix is harmless to all metals during the cleaning cycle, and you can clean all types of metals in one tank. Lix is **SAFER**, too — tests conducted by one of the nation's leading research laboratories prove that it is of low toxicity, and because of its high flash point it is not a fire hazard.

Because of its long life without frequent charges, Lix Diesel Klean Heavy is far more **ECONOMICAL** in the long run than "less expensive" cleaners. This is one of the reasons why more and more railroads are relying on LIX.

WRITE, wire or phone for a no-cost, no-obligation **DEMONSTRATION** in your shop. See how you can do a **BETTER** locomotive-cleaning job . . . **FASTER, MORE SAFELY** and at **LESS COST!**



Manufacturers of Lix Diesel Klean Heavy
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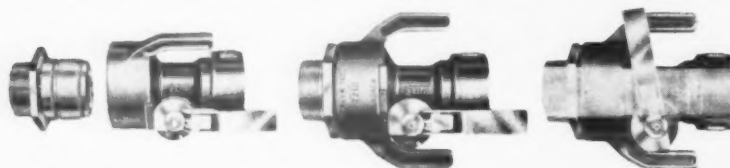
LESS THAN A SPOONFUL OF FUEL IS LOST

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Make every drop of fuel count in road mileage... actual road tests have proved that less than a spoonful of fuel is lost during each fueling operation with Roylyn equipment. **STOP WASTE NOW...** Specify Roylyn "Non-Spill" Valves.

Roylyn Valves not only save **FUEL**, but also save **TIME, MANPOWER** and **MAINTENANCE**.

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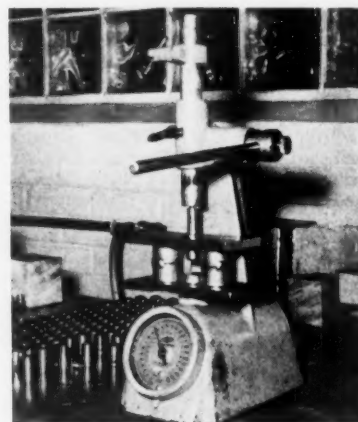


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Diesel Ideas

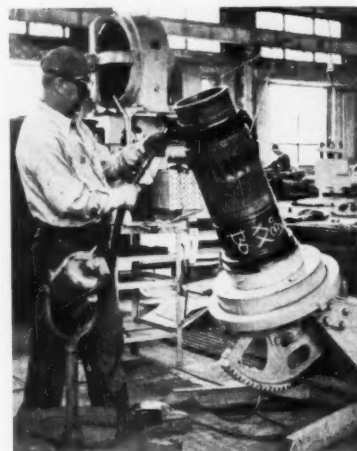
(Continued from page 38)

ing, contraction seals the water space and the complete assembly goes on for further reclamation in PRR's Altoona shop.



Testing... Lash Adjustors

Pressure applied to lash adjuster with arbor is measured on scale at Union Pacific's Omaha shop. When 60 psi is reached, set screw is tightened to check that pressure does not go below 40 psi in 30 sec. Oil is kept at 90 to 95 deg.



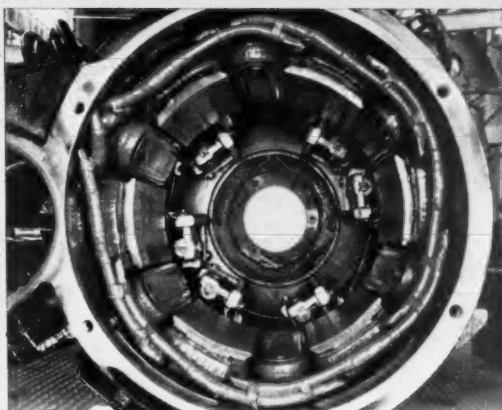
Cleaning... Power Assemblies

Welding positioner, hold-over from steam days at Chicago & Eastern Illinois' Danville shop, has been powered with 1-hp motor and foot control. Port openings and seats are cleaned twice as fast and much more safely, according to C&EI.

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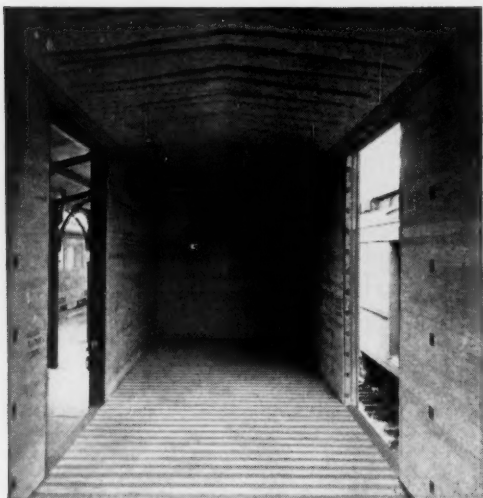
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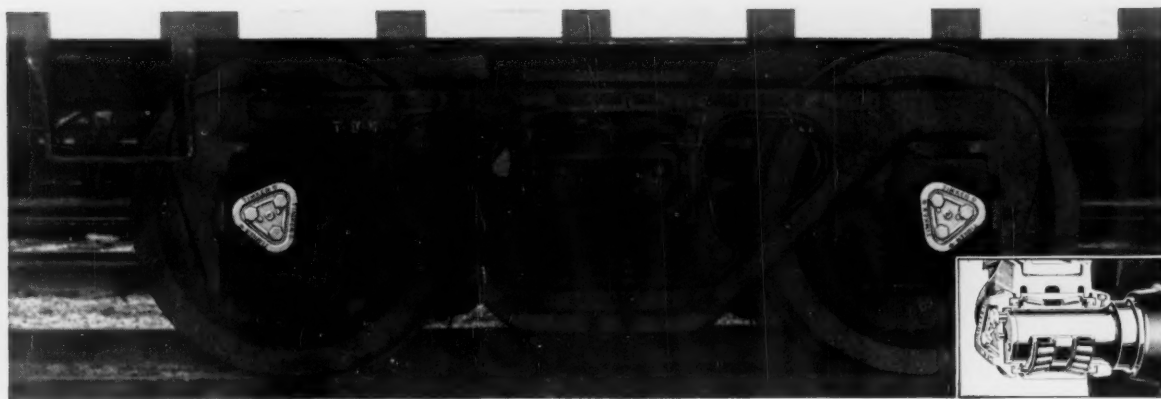
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